

# The Commercial Car Journal

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## The Standard Military Truck Problem Solved

Truck and Parts Makers and the Government Reach Understanding  
and Effective Co-operation is Now Assured

**H**ARMONY is restored over the question of standardizing military trucks for the Government. An outcome that might have been expected and certainly is gratifying was reached at the meeting of truck makers and manufacturers of parts and Government officials and members of the Society of Automotive Engineers' Standards Committee at Columbus on July 20 and 21, with an attendance of about two hundred. Opportunity was given for the questions that have come up in connection with military truck standardization to be thoroughly discussed and the attendants were invited most urgently to speak their minds and air their opinions. The principal difficulty apparently for some time has been the want of understanding between those striving to arrive at a standard and those who thought it not feasible for the present.

We ourselves commented editorially in the last issue on the subject, raising the point that there might be something more important than settling on one form of truck under present exigencies and that, while standardization is unquestionably desirable, it might be opportune to postpone the attempt. This seems to have been the general opinion. All are agreed that for strategical reasons a standard truck is ideal in warfare, the only question has been one of practicability to get such a standard truck on the ground in time and in quantity sufficient to care for the army's needs.

The address made in opening the meeting by Coker F. Clarkson, general manager of the Society of Automotive Engineers, and later in the meeting the one by Capt. W. M. Britton, engineer of motor transport, Quartermaster Corps, cleared up the misunderstanding which had existed amongst most of the truck manufacturers. It had been the expectation that the standard was to be adopted at once and several of the prominent truck manufacturers felt so strongly that it would be unwise that thirteen of them held a meeting on their own account in advance of this meeting and decided to protest most vigorously against the proposed program. These included the Pierce-Arrow, Kelly-Springfield, Nash, Packard, Reo, Federal, White, International, Locomobile, Gramm, Autocar, Republic and General Motors companies. With George M. Graham as spokesman, they declared their desire to be of use to the Government, but felt they could be of most use by furnishing their regular products and in so doing if necessary would stop everything but Government work, and that they were prompted only by a spirit of patriotism and unselfishness in discouraging any attempt to force through the standardized truck program for the present. In support of this they brought

up the difficulties that would arise in connection with retooling their plants, delays bound to occur in getting a new product through and tested in less than from a year and a half to two years so that it could be guaranteed to stand up to its especially severe work, interference likely to come with those manufacturers that are engaged in other Government work, such as the building of aviation engines, and argued also that they can make best and quickest what they are accustomed and fully equipped to make and that their own stock product to the number of some 42,000 and of many different makes has made good in the hands of the Allies to date to such an extent that England abandoned its plan of a standard truck and is today ordering stock American cars on repeat orders, insisting that there be no changes made in them. These and other points, including the economic importance of making use of what we now have in the way of plants, systems and tools, and the fact that all of the larger companies now have thoroughly equipped service stations established in Europe, were brought out by the speaker and also by Alvin Macauley, of the Packard Motor Car Co.; E. B. Jackson, of the Willys-Overland Co.; C. W. Hellen, of the Dart Motor Truck Co., and others.

### What the Government Intends to Do

When it was made evident that the Government intends to buy cars of present stock designs to the extent of some 15,000 as already contracted for and more to replace these and extend their range of service, and that the standard truck will be worked out and developed with all the time and care necessary before attempting to put it into the war service, it proved that the makers and the Government were quite at agreement without knowing it.

The culmination of the general meeting, before the body broke up into divisions for discussion of the various units, made it apparent that the heartiest accord existed and that the motor truck companies would gladly make whatever the Government specified if only given sufficient time to do it properly and that in the meantime the Government would use the stock output of those companies whose bids are accepted.

During the time that the preliminaries are being worked out, variously estimated as likely to require from a year to two years' time, before tested standardized trucks are actually in the field, the Government will supply its immediate requirements from the stock output of builders whose designs will be most suitable, based on the experience already had with them in the hands of the Allies. It will then be the aim to have all

of one make in any one division, so that each repair station will have to carry a minimum stock of repair parts to keep the equipment for which it is responsible in service. Inasmuch as it will be some time before the conscripted army is ready for the field, and as it will not be until then that the bulk of the motor truck equipment will be required, it is felt that the standard truck may be available at the time it is needed.

Since it has been made clear that the Government is to take the matter in its own hands, as in fact it was compelled to do if it carried out its program, the Society of Automotive Engineers will no longer figure; in fact, the Standards Committee has gone as far as it can, for its part has really been to unofficially tender the use of its machinery and facilities to get something started. Now that the Government has decided on a plan of action, the S. A. E. is discharged with thanks, so to speak, and hired engineers will be selected to work out the details. Therefore, trucks for the Government will be built as are battleships today, according to specifications, and they will be no individual make or product, nor carry the name of the maker, but will be strictly military trucks of Government pattern built by any manufacturer or assembler whose bid is accepted. In this way all of the country's capacity for build-

ing trucks will be made available where otherwise the Government would have to depend on only the large producers.

The War Department is taking complete charge of the work from now on. The Secretary of War, Newton D. Baker, has already provided for a sufficient appropriation to cover the work of developing the standardized Type A and Type B trucks. The first work will be in connection with the Type B, as several times as many of these will be needed as of the Type A and the Type A has moreover already been largely taken care of. It is believed that the finished trucks of both types, representing as they will the composite experience and ability of the foremost engineering brains in the motor truck field, will be superior to anything ever yet produced, especially for the purpose.

Herewith are shown views of the informal committees, if they may be called such, which gathered after the general meeting around the tables where transmissions, bearings, chassis and other parts were separately discussed.

There follows a list of the companies whose representatives attended the meeting, and after that is given the opening address by Mr. Clarkson, before referred to, and that of Capt. Britton.

## Register of Attendance at Military Truck Meeting Columbus, Ohio, July 20 and 21, 1917

### AXLES

Adams Axle Co., Findlay, Ohio: R. H. Rosenberg.  
Clark Equipment Co., Buchanan, Mich.: R. J. Burrows.  
Columbia Axle Co., Cleveland, Ohio: R. E. Fries.  
Kalamazoo Spring & Axle Co., Kalamazoo, Mich.: C. H. Gleason.  
Savage Arms Corp., Sharon, Pa.: S. H. Smith.  
Sheldon Axle & Spring Co., Wilkes-Barre, Pa.: A. M. Laycock, R. A. Schaaf.  
Timken Detroit Axle Co., Detroit, Mich.: G. W. Carlson.  
Torbensen Axle Co., Cleveland, Ohio: V. V. Torbensen.  
Western Spring & Axle Co., Carthage, Ohio: D. K. Moore.

### BEARINGS

Bound Brook Oil-Less Bearing Co., Bound Brook, N. J.: W. F. Jennings, H. J. Lindsley.  
Gurney Ball Bearing Co., Jamestown, N. Y.: J. T. R. Bell.  
Hess-Bright Mfg. Co., Philadelphia, Pa.: R. E. Clingan.  
Hyatt Roller Bearing Co., Detroit, Mich.: R. E. Wells.  
New Departure Mfg. Co., Bristol, Conn.: S. B. Dusenberre, F. G. Hughes, F. W. Marschner.  
Norma Co. of America, New York City: G. R. Bott.  
SKF Ball Bearing Co., Hartford, Conn.: G. C. McKay, C. R. Mabley.  
Timken Roller Bearing Co., Canton, Ohio: T. V. Buckwalter.  
U. S. Ball Bearing Mfg. Co., Chicago, Ill.: O. Bruenauer, Howard L. Spohn, Walter Strom.

### ELECTRICAL EQUIPMENT

Adams & Westlake Co., Chicago, Ill.: C. E. Banta.  
Bijur Motor Lighting Co., Hoboken, N. J.: Joseph Bijur, L. M. Woolson.  
Condensite Co. of America, Bloomfield, N. J.: Sanford Brown.  
Conn. Telephone & Elec. Co., Meriden, Conn.: C. E. Stahl.  
Continental Motors Corp., Detroit, Mich.: B. A. Weinhardt.  
Dayton Engineering Laboratories Co., Dayton, Ohio: F. W. Edwards, W. A. Chryst, O. L. Harrison.  
Eclipse Machine Co., Elmira, N. Y.: V. Bendix.  
Gould Storage Battery Co., N. Y. (Detroit): W. H. Conant.  
Hall Lamp Co., C. M., Kenosha, Wis.: W. A. Bell.  
Kokomo Electric Co., Kokomo, Ind.: Fay Beal.  
Norma Co. of America, New York City: G. R. Bott.  
Menominee Elec. Products, Detroit, Mich.: F. R. Hoyt.  
North East Elec. Co., Rochester, N. Y.: W. H. Hutchins.  
Pfanstiehl Co., Inc., No. Chicago, Ill.: A. O. Dady, J. M. Troxel.  
Prest-O-Lite Co., Inc., Indianapolis, Ind.: M. Noble.  
Remy Electric Co., Detroit, Mich.: F. C. Kroeger, G. V. McMahon.  
Splittorf Electrical Co., Newark, N. J.: W. J. Hart, E. A. Kelly, A. D. T. Libby.  
Swiss Magneto Co., Monroe, Mich.: H. S. Martin.  
The Teagle Co., Cleveland, Ohio: F. H. Teagle.  
Vesta Accumulator Co., Chicago, Ill.: F. S. Armstrong.  
Wagner Electric Mfg. Co., St. Louis, Mo.: A. H. Timmerman, J. A. Gelzer.  
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.: J. M. Hipple, G. H. Lewis, C. E. Wilson.  
Willard Storage Battery Co., Cleveland, Ohio: T. R. Cook, R. J. Nightingale.

### ENGINES

Buda Company, Harvey, Ill.: R. J. Broege.  
Continental Motors Corp., Detroit, Mich.: L. A. Weinhardt.  
Muskegon Engine Co., Muskegon, Mich.: Irving P. Miller.  
Waukesha Motor Co., Waukesha, Wis.: J. B. Fisher, H. L. Horning, S. W. Perkins.

### FANS

Spark-Withington Co., Jackson, Mich.: R. B. Weeks, Geo. A. White.

### FRAMES

Parish & Bingham Co., Cleveland, Ohio: W. W. Hatch.  
Savage Arms Corp., Sharon, Pa.: C. H. Smith.

### MISCELLANEOUS

American Die & Tool Co., Chicago, Ill.: Frank Gisserd.  
Browne Co., The, Syracuse, N. Y.: H. W. Browne.  
Commercial Eng. Lab., Detroit, Mich.: Claude E. Cox.  
Frasse, Peter A. & Co., New York City: John R. Cautley.  
Fulton Co., Knoxville, Tenn.: J. V. Giesler.  
Geuder, Paeschke & Frey, Milwaukee, Wis.: H. B. Walker, F. J. Lesh, C. G. Wood.  
Hotz Foundry & Mfg. Co., Fremont, Ohio: Geo. J. Hotz.  
Tide Water Oil Co., New York City: C. W. Stratford.

### RADIATORS

G. & O. Mfg. Co., New Haven, Conn.: E. G. Edwards.  
McCord Mfg. Co., Detroit, Mich.: J. D. Harris.

### SPECIAL

Britton, Capt. Wm. M., Q. M. C., Lemon Bldg., Washington, D. C.  
Clarkson, C. F., General Manager, S. A. E.  
Clayden, A., Ludlow, Class Journal Co., 239 W. 39th St., N. Y. City.  
Drake, Major C. B., Q. M. Corps, Washington, D. C.  
Dunham, G. W., Garfield Bldg., Detroit, Mich.  
Hornung, H. L., 301 Munsey Bldg., Washington, D. C.  
Utz, J. G., Standard Parts Co., Hickox Bldg., Cleveland, Ohio.  
M. W. Hanks, S. A. E., New York.

### SPRINGS

Detroit Steel Products Co., Detroit, Mich.: R. E. Bissel, M. P. Rumney, S. P. Hess.  
Kalamazoo Spring & Axle Co., Kalamazoo, Mich.: C. H. Gleason.  
Mather Spring Co., Toledo, Ohio: N. E. Hendrickson.  
Penn Spring Works, Inc., Baldwinville, N. Y.: P. A. Hopkins.  
Perfection Spring Co., Cleveland, Ohio: W. E. Dunston, R. A. Townsend.  
Standard Parts Co., Cleveland, Ohio: W. C. Keys, D. K. Moore.  
Standard Steel Spring Co., Coraopolis, Pa.: D. T. Gleason.  
Sheldon Axle & Spring Co., Wilkes-Barre, Pa.: E. W. Acker, R. A. Schaaf.  
Wm. & Harvey Rowland, Inc., Philadelphia, Pa.: E. Busby, W. H. Newkirk.  
Willys-Overland Co., Toledo, Ohio: C. W. McKinley.

### STEERING GEARS

C. A. S. Products Co., Columbus, Ohio: J. W. Graham.  
Ditwiler Mfg. Co., Galion, Ohio: H. F. Lee, L. M. Liggett.  
Jacox Steering Gears, Saginaw, Mich.: H. M. Denyes, T. R. Johnson.  
Lavine Gear Co., Racine, Wis.: Geo. A. Streicher.

### TRANSMISSIONS

American Die & Tool Co., Reading, Pa.: D. Sternberg.  
Brown-Lipe Gear Co., Syracuse, N. Y.: Geo. C. Carhart, W. C. Lipe.  
Campbell Transmission Co., Cleveland, Ohio: L. J. Campbell, L. L. Campbell.  
Cotta Gear Co., Rockford, Ill.: Chas. Cotta.  
Covert Gear Co., Inc., Detroit, Mich.: A. A. Gloetzner.

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 Merchant & Evans Co., Philadelphia, Pa.: J. C. McIlroy.  
 Muncie Gear Works, Muncie, Ind.: W. W. Peck.  
 Warner Gear Co., Muncie, Ind.: R. P. Johnson, S. O. White.

### TRUCKS

Acason Motor Truck Co., Detroit, Mich.: H. W. Acason, R. G. Shuert.  
 Atterbury Motor Car Co., Buffalo, N. Y.: J. R. Coleman, J. R. Spraker.  
 Autocar Co., Ardmore, Pa.: D. S. Ludlum, H. M. Coale.  
 Bethlehem Motors Corp., Allentown, Pa.: L. K. Gordon.  
 C. A. S. Sales Co., Detroit, Mich.: C. D. Cutting.  
 Chalmers Motor Car Co., Detroit, Mich.: H. M. Jerome.  
 Clyde Cars Co., Clyde, Ohio: W. W. Wells, H. D. Shamberg.  
 Commercial Vehicle, The, New York City: Jos. Husson.  
 Cunningham & Sons, Jas., Rochester, N. Y.: V. E. Lacy.  
 Dart Motor Truck Co., Waterloo, Ia.: C. W. Heller, W. H. Johnson.  
 Denby Motor Truck Co., Detroit, Mich.: E. E. Wemp.  
 Denneen Motor Car Co., Cleveland, Ohio: F. S. Denneen, C. N. Mitchell.  
 Detroit Truck Co., Detroit, Mich.: Carl F. Jeffries.  
 Detroit-Wyandotte Motor Truck Co., Wyandotte, Mich.: Geo. A. Horner.  
 Diamond T Motor Car Co., Chicago, Ill.: D. W. Jones.  
 Dorris Motor Car Co., St. Louis, Mo.: W. R. Colcord, G. P. Dorris.  
 Falls Motor Corp., Sheboygan, Wis.: R. W. Randall.  
 Federal Motor Truck Co., Detroit, Mich.: M. L. Pulcher, B. F. Wright.  
 Garford Motor Truck Co., Lima, Ohio: J. A. Kraus, B. M. Price, E. A. Williams, S. M. Williams.  
 General Motors Co., Toledo, Ohio: K. W. Zimmerschied.  
 General Motors Truck Co., Pontiac, Mich.: F. A. Whitten, W. L. Say.  
 Geuder, Paeschke & Frey Co., Milwaukee, Wis.: A. B. Walker.  
 Gramm-Bernstein Motor Truck Co., Lima, Ohio: R. W. Austin, B. A. Gramm.  
 Hercules Motor Mfg. Co., Canton, Ohio: Chas. Balough.  
 Hinkley Motor Corp., Cleveland, Ohio: C. C. Hinkley.  
 Houghton Motor Car Co., Marion, Ohio: E. M. Houghton, S. S. White.  
 Hurlburt Motor Truck Co., New York City: W. F. Legg, R. W. Watkins.  
 Indiana Truck Corp., Marion, Ind.: M. L. Kerr.  
 International Motor Co., New York City: A. G. Brasseur, D. Fenner.  
 Kelly-Springfield Motor Truck Co., Springfield, Ohio: C. I. Gardner, L. P. Kalb, J. L. Geddes.  
 Kissel Motor Car Co., Hartford, Wis.: G. A. Kissel, H. Palmer.  
 La France Motor Truck Co., Elmira, N. Y.: R. W. La France.  
 Lippard-Stewart Motor Car Co., Buffalo, N. Y.: C. D. Peterson, J. C. Miller.  
 Locomobile Co. of America, Bridgeport, Conn.: A. L. Riker.  
 Meteor Motor Car Co., Piqua, Ohio: Maurice Wolfe.

Moon Motor Car Co., St. Louis, Mo.: Geo. F. Heising.  
 Moreland Motor Truck Co., Los Angeles, Cal.: W. L. Moreland.  
 C. T. Myers, 117 West Fort St., Detroit, Mich.: C. T. Myers.  
 Nash Motors Co., Kenosha, Wis.: Geo. W. Smith.  
 National Car Co., Detroit, Mich.: E. L. McMillan.  
 New England Truck Co., Fitchburg, Mass.: E. G. Moulti.  
 Packard Motor Car Co., Detroit, Mich.: H. D. Church, H. B. Knap, Alvan Macauley.  
 Pierce-Arrow Motor Car Co., Buffalo, N. Y.: John Younger, W. J. Foss, G. M. Graham.  
 Reo Motor Car Co., Lansing, Mich.: H. T. Thomas.  
 Republic Motor Truck Co., Inc., Alma, Mich.: F. W. Ruggles.  
 Rowe Motor Mfg. Co., Downingtown, Pa.: Samuel J. Rowe.  
 Sayers and Scovill Co., Cincinnati, Ohio: Emile E. Hess.  
 Selden Motor Vehicle Co., Rochester, N. Y.: W. T. Norton, Jr.  
 Service Motor Truck Co., Wabash, Ind.: M. Cook, Chas. Guernsey.  
 Stegeman Motor Car Co., Milwaukee, Wis.: L. G. Schertl.  
 Sterling Motor Truck Co., Milwaukee, Wis.: Arthur C. Wollensak, E. M. Sternberg.  
 Stewart Motor Corp., Buffalo, N. Y.: R. G. Stewart.  
 Studebaker Corp., Detroit, Mich.: Vincent Link, Henry T. Myers.  
 Taylor Motor Truck Co., Fremont, Ohio: R. E. Taylor, R. J. Willoughby.  
 Thomas & Thomas, Garfield Bldg., Detroit, Mich.: W. Owen Thomas.  
 Union Motor Truck Co., Bay City, Mich.: H. P. Woodworth.  
 United States Motor Truck Co., Cincinnati, Ohio: F. J. Alvin, E. C. Shumard.  
 United Motors Co., Grand Rapids, Mich.: E. A. Bedford.  
 Velie Motors Corp., Moline, Ill.: G. E. Martin, C. B. Rose.  
 White Motor Car Co., Cleveland, Ohio: A. J. Scaife, Windsor T. White, Geo. H. Kelly.  
 Willys-Overland Co., Toledo, Ohio: E. B. Jackson, C. W. McKinley, W. S. Fisher.  
 J. C. Wilson Co., Detroit, Mich.: C. A. Freeman.  
 Winther Motor Truck Co., Kenosha, Wis.: M. J. Winther.

### UNIVERSAL JOINTS

Blood Brothers Machine Co., Kalamazoo, Mich.: R. R. Potter.  
 Mechanics Machine Co., Rockford, Ill.: E. S. Ekstrom, C. E. Swenson.  
 Spicer Mfg. Co., South Plainfield, N. J.: C. W. Spicer.

### WHEELS, TIRES AND RIMS

Clark Equipment Co., Buchanan, Mich.: R. J. Burrows.  
 Dayton Steel Foundry Co., Dayton, Ohio: G. Walther.  
 Firestone Tire & Rubber Co., Akron, Ohio: E. W. BeSaw.  
 B. F. Goodrich Co., Akron, Ohio: T. A. Aspell.  
 Muncie Wheel Co., Muncie, Ind.: H. B. Baunister.  
 Standard Steel Casting Co., Cleveland, Ohio: E. H. Jones, F. J. Still.  
 West Steel Casting Co., Cleveland, Ohio: G. L. Lavery, R. W. West.

## How Military Truck Standardization Started\*

Account of the S.A.E. Activity in Connection With the Government's Need of Army Trucks

By COKER F. CLARKSON

IN the Spring of 1916 Col. Chauncey B. Baker, then in charge of the Transportation Division of the Quartermaster Department, submitted to the society for criticism a draft of military truck specifications prepared in his department. He asked that comment be made quickly on these so that the specifications could go into effect on July 1, 1916, the beginning of the 1917 fiscal year. This called for an activity of the society different from that it follows in its standardization work, in which no final action by way of establishment of standards can be taken in a shorter time than several months. There was a truck standards division of the Society at this time, but it had been giving attention only to matters relating to solid tire equipment of standards can be taken in a short-amental design questions. The division was not constituted of truck designers exclusively, but included in its membership tire men and others specially conversant with the subjects being considered by the division.

In order to comply with the Government's request the Society called officials of the National Automobile Chamber of

Commerce into conference and asked representative truck manufacturing companies, according to the best list that could be made up at the time, to send their chief engineers to a meeting at the Society's rooms to consider the military truck need of the Government. The meeting was held with fifty or more engineers and others present. Colonel Baker explained the attitude of the Government, and he and Captain Britton entered into a somewhat detailed discussion with those bringing up questions.

The action taken at this meeting was to appoint a representative committee to study the draft of specifications of the Quartermaster Department. This committee held a few long sessions and finished up its work as well as possible in the short time available.

The Council of the Society then revised the personnel of its truck standards division to consist of truck designers only. The division has been continued the same substantially to date. It is now constituted of engineers of five companies manufacturing trucks, five companies assembling trucks, an engineer of a truck factory not making the type of truck being deliberated upon, and Captain Britton, of the Quartermaster General's office.

In the matter of truck specifications the Society has conferred in turn with the War College Division of the general staff, the Adjutant General and the Quartermaster Department. In order to simplify proceedings the Society made inquiry as to how many departments of the Government would need trucks in volume. This resulted in the establishment by the Government of the War Department Motor Transport Board, which reported the number of cargo trucks that would probably be needed in the various branches of the service.

The reorganized truck standards division of the Society then proceeded to make a draft of so-called ideal truck specifications. The War Department Motor Transport Board also produced a revised draft of specifications and submitted it for criticism. In order to save time and energy the truck standards division held joint meetings with the War Department Motor Transport Board, the concluding sessions lasting three days.

In due course the present War Department specifications were issued. The work of the truck standards division and of other divisions of the Society, in co-operating with the Government in the matter of the specifications, was approved at

\*Opening address by the general manager of the Society of Automotive Engineers at the Military Truck Conference at Columbus, O., July 20 and 21.

the meeting of the Standards Committee meeting mentioned, its transmission do not constitute a standard of the Society, except in so far as standards established by it therefore are included in the specifications.

At the time of the Standards Committee meeting mentioned, its transmission division, which had just been established, held an organization meeting. It became clear that none of the product of the transmission makers met the War Department specifications. This naturally resulted in investigation as to what could be done to meet them. The transmission makers showed a surprising willingness to work together, even to the extent of producing transmissions identical throughout.

In turn the engine makers held conferences with a view to meeting the specifications in the best way. As a result the axle, spring, universal joint, radiator, frame and fan manufacturers were called in. The whole purpose in mind in this respect has been not to seek to modify the War Department specifications, but to bring about such interpretation of them as would result in the production of parts, as well as complete trucks, in sufficient numbers to supply the Army adequately with trucks of proper type, the assembly units being interchangeable so far as possible, and perhaps the parts of units of different make being interchangeable to some extent.

### Truck and Parts Makers' Help

The way in which the truck and parts manufacturers have co-operated in meeting after meeting recently is very remarkable, a surprise in one way to everybody, and a most gratifying manifestation of patriotism in a matter of vital importance in military operations. The meeting today is for the purpose of carrying the standardization to its logical conclusion.

Every one interested, so far as is known, has been invited to attend. Sixty truck companies have been asked to have their executive officers here.

It is the desire of the Government, as announced by the Secretary of War at the last dinner of the Society, that the standardization be forwarded as promptly as possible. The Government has awarded contracts to meet its needs for the near future. In doing so it has, I believe, been consistent in adhering to its specifications as far as possible, as there is every evidence of its doing in the future, when larger numbers of trucks meeting the specifications more fully will be available.

Advices have been given that the Government will lend every assistance looking toward the production of adequate numbers of trucks of the types it needs.

Captain Britton, who has been a regular attendant at our meetings, is here again today. We are honored also by the presence of Major C. B. Drake, who has charge of transportation for the Quartermaster General's office.

We want a frank full discussion, for the purpose of closing this whole matter up, bringing the best result in army transport and the satisfactory conclusion of war as soon as possible.



Group of Truck and Parts Makers and Engineers Attending the Military Truck Conference Called by the Government, at Columbus, Ohio, July 20 and 21, 1917



# The Military Truck Program of the Government\*

Stock Trucks From Large Producers for Immediate Needs, Standard Trucks From all Makers as Soon as Practicable

By CAPT. WILLIAM M. BRITTON

SEVERAL speakers have laid special stress on the attempt which England made to standardize motor trucks. England tried to standardize her trucks. She failed ignominiously. This country, in the face of that experience, is figuring on doing the same thing. Why? It would look on the face of it like an unexplainable act, how we could possibly figure on following in the footsteps of a failure which England has acknowledged to have made. If we were working under the same conditions as England was working under, then I say that every man who attempted to do the same thing ought to be taken out and shot, if he is acting in the face of the experience which England is known to have had.

But are we working under the same conditions that England worked under?

We most certainly are not. It was admitted that this attempt to standardize trucks was going to tie up the whole automotive industry or auto-truck industry of England. In other words, if they attempted to put across this standardization it would interfere with the production of those trucks which they were so badly in need of. That in itself, irrespective of what product they expected to get, would have been a fatal mistake.

On the other hand, they were attempting this standardization after they had acquired thousands upon thousands of other trucks and had them in the field.

why they tell the manufacturers not to change anything is not because they say "these trucks are absolutely what we want; these trucks fulfill our every requirement." Not by any means. They have got these trucks, thousands upon thousands; they have to maintain these trucks; they have to get all the parts to take care of all the

vices of the very best engineers and men connected with motor transportation that are available in this country and in Europe.

It is not contemplated that we will start right in now, make a truck on paper, and say, "That truck looks right. We will build that truck now by the thousands and



These Men Discussed Steering-Gear Standardization for Government Trucks

repairs; and that is a gigantic task, as every one realizes who has had anything to do with the maintenance of trucks or anything else connected with the war. They realize that just as soon as any manufacturer makes the least change in any part which is different from his standard, that

send them over to Europe to use on the battlefield." Nobody has thought of entertaining such a crazy proposition. We expect to conduct this work in an entirely reasonable way, and in such a way as will be agreed upon by all the various engineers and executives who will consult with us in this matter. We, of course, realize that we must depend upon the standard manufacturers, or the manufacturers of standard commercial trucks for all of our equipment up to the time that we can obtain standardized trucks in quantity, and trucks which we can be sure are right, trucks which are right and that there will be no question about, trucks which we have thoroughly tried, trucks which I admit will be worked night and day. We will not let those trucks rest a minute. We will put loads on those trucks. We will run them over the worst country conditions we can find in the United States, under all sorts of conditions. We will put our engines under non-stop runs. We will do everything possible in this work to further these tests and to make sure that the design is right and that they are constructed properly in every detail to withstand the service which military trucks must withstand.

One gentleman has referred to the fact that this program would interfere seriously with his factory, because of the fact that it might be called upon, probably would be called upon, to produce aviation engines. What kind of aviation engines is he going to produce? What sort of work is being done in order to obtain a proper aviation engine at the present time? They are doing exactly the same thing that we are contemplating doing. So why should



Group Considering Radiator, Fan and Pump Standardization

They have also called our attention to the fact that England and the other Allies are using ordinary standard commercial trucks, built by the large manufacturers, and that they refuse to have these trucks changed in any way. Why? I want to tell you frankly that that is right. There isn't the least question about the desirability of that procedure. I want to tell you also that it is exactly in line with what we are attempting to do. The real, vital reason

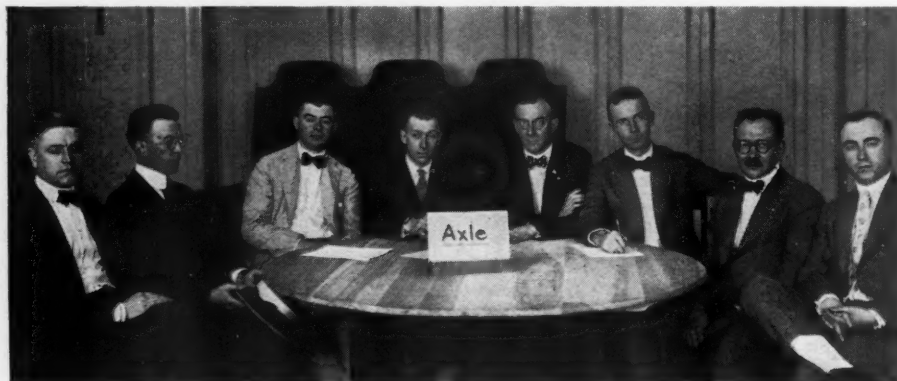
it at once interferes greatly with their entire program. They are sure to send out parts to various sections of their fronts which will not work, and that procedure would be fatal to their program.

Now, here, what we are attempting to do is exactly the same thing, only what we want to do is to do this thing in the beginning, just as quickly as we possibly can, and not have a dozen different makes of trucks—and they say they have had from twelve to twenty over there, with its attendant gigantic task of replacements; but it is to have one truck, which we will decide upon only after we have had the ser-

\* Address by the Engineer of Motor Transport, Quartermaster Corps, U. S. A., before the Military Truck Conference at Columbus, O., July 20 and 21.

they object to doing the same thing for us? They have recognized the fact that the standardization of aeroplanes is an extremely important thing. It is the all-important thing, indeed. They are right in the beginning of their aviation program. We are right in the beginning of our motor truck campaign, our program. They are pushing with feverish haste the standardization of airplanes. They will have airplanes by thousands. These airplanes will be standard. They will be standardized in all parts. They will have one en-

to stern, are we at any disadvantage compared with the standardization of these airplanes? I tell you we are at a decided advantage, compared with their program. We are not going to do that. We are not going to put a lot of experimental devices in this motor truck. We are going to use those devices which have been thoroughly proved out and which you engineers know to be right. You will say, "I know it is right, because I have been using it for years. There is no experiment about it."



Conferees on Axle Standardization for Military Trucks

gine. They are getting the very best aviation talent this country affords to design these airplanes, the engines and all their component parts. They are not going to use these airplanes or these motors until they have been thoroughly tested. They are employing engineers who understand aviation, who have built aviation engines. Those men are designing an aviation engine which in their opinion is the best en-

They are drafting the men today for this Continental army. I believe one great peace advocate said we could raise 1,000,000 men from sundown to sunup. We can. Today will prove that. But they are 1,000,000 men. They are not 1,000,000 soldiers. It takes a long time to properly train soldiers. It takes a long time to get all the various intricate equipment which must go with those soldiers. It is

going to take a long time to get the shipping equipment which will transport those soldiers and supplies over to the other side. When are they going to get their men there? When are they going to get their supplies over there? After they get all of their supplies and all of their men over there, when are you going to need motor trucks? Are you going to take these men over there immediately to the front, so far from railhead that you must immediately have large motor transportation facilities? Certainly not. Those men have got to get on their feet. They have to be trained on the ground. Undoubtedly they will be put in encampments, the most reasonable thing in the world. And you would not put those encampments or cantonments away off from railhead, would you? Certainly not. Those encampments will be right around railheads where supplies can be got by the shortest route. It will take a few motor trucks no doubt to transport those supplies from the railhead to the encampment, right around there. But when are you going to require these trucks? You are not going to use them until the men are at the front, where you have to truck these supplies from the railhead to the men. That is when you are going to need them. Then, I say, Why must we insist on getting all of these trucks immediately? There doesn't seem to be any real reason for it.

But, as I said, in every military emergency you will always do what you must do. We will always obtain the standard commercial trucks whenever it is necessary to get them. But we are going to push with all the haste possible the standardization of these trucks, so that they will be complete and have been tried and thoroughly proved at the earliest possible moment. It will be months before they have thoroughly tested, tried and proved their airplanes, and have them produced in quantity and have them transported to Europe. And they need them both at the same time.

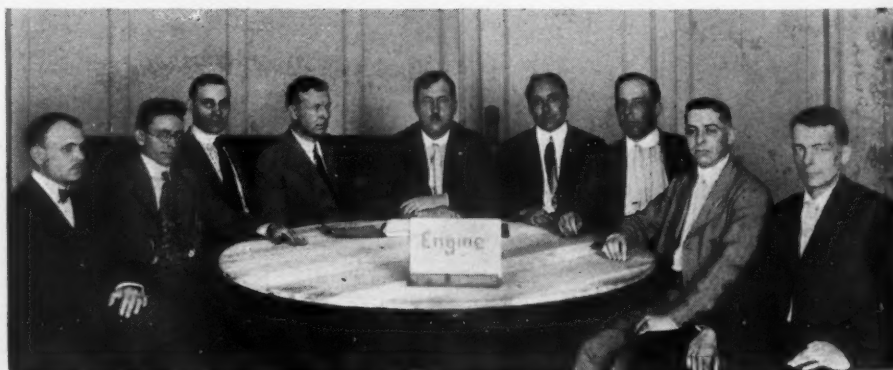
Another point which might be pertinent to speak of is the trucks which the Allies are using—the make and type of trucks which they are using and which they are insisting upon continuing to use. They are continuing to use these trucks, you say, for the simple reason that they are right for their service; they have been found to meet every requirement. Of course, that is not the reason. They in the beginning had to get trucks. Every one knows



Interchangeability of Military Truck Springs Considered Here

gine that has been produced up to the present time for war purposes. They have been confronted with a lot of problems which have not yet been solved. Those problems will not be encountered in the design of motor trucks. Motor trucks have been used successfully for years, and there are no big problems which have not been overcome.

When are they going to get these airplanes? You say when are we going to get these motor trucks? We are going to need motor trucks at the same time they need airplanes. They have got to have the motor trucks when they get the airplanes. If we have to start out now and design a complete motor truck from stem



Engine Authorities Who Took Part in the Standard Truck Conference

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what the program was in 1914, and since that time. They had to buy these trucks, all the trucks they could put their hands on. They had to go to the largest manufacturers of trucks and take all they could possibly get of them. They needed trucks. "No, we can't wait until you standardize something, and get something that would be a little better for our use. We have to have them now; we want them quickly; give us anything you have got; we want to go to the large manufacturers so as to eliminate the number of makes as far as possible, but we must have the trucks." They have obtained those trucks. They can't possibly go back. They must keep on using those same trucks that have up to the present time fulfilled their requirements in a fairly satisfactory manner. But the real reason why they have to stay with those trucks is because they have already obtained them in large quantities, and cannot go to other makes; they cannot go to changes in these same trucks because of the extremely difficult problem of maintaining these trucks and securing proper parts.

A very large number of manufacturers and several of the old-line manufacturers have agreed to furnish us these trucks, which are very closely in conformity to our specification requirements, in from 4 to 6 months. I think that tells a big story. That shows what they can do. One very prominent truck manufacturer, or engineer, rather, I will say, designed a truck especially to comply with these specification requirements.

At first, when some of the engineers read these specifications, they believed they were somewhat imaginary and idealistic, and nothing that was really desirable; they had never built anything like that, and they didn't see any necessity for making them; they had always been getting away very well with their old truck, selling them for commercial use. They built one of these trucks as closely as they could, went to a good deal of expense to get it. He took it out and tried it, and said that he was perfectly surprised at the performance of that truck.

Just another point we should keep in mind which has specific relation to the performance which they have obtained with the standard commercial trucks in Europe: They have been buying entirely, I guess we may say, the ordinary standard commercial trucks. They have found these trucks to be fairly satisfactory. In other words, they have performed at least in a fairly satisfactory manner the duty which was re-

quired of them. But are we going to continue to operate under the same conditions as we have been operating under for about three years? These trucks had to operate over the comparatively good roads back of the line. Why, of course, the ordinary commercial truck would run over those roads. How could it help it? They have had thousands of men back of the lines making these roads, maintaining these lines of communication, right up to the front, or back of the front a short distance, where the regimental wagon trains

You say these specifications were gotten up because of the deplorable conditions we found in Mexico. We found that the ordinary commercial truck did not get along there. Another thing that is very pertinent: We had some trucks there which were the ordinary standard commercial truck. There was one make in particular which has been furnished by the thousands to Europe and which has been found to be thoroughly successful, because they are continuing to buy them. I want to tell you that that truck was a positive failure



Chassis Conferees With Captain Britton in the Center

had to pick up the supplies and carry them over the torn and shell-infested regions. Are we going to continue to operate under the same conditions? Is that front going to remain where it is now for all time to come? I tell you, gentlemen, it is not. We are going forward. We must go forward, or else we are not going over there. And when we do go forward, we will be going over the most terrible country the world has ever known.

in Mexico. It would not go anywhere. It could not be depended upon.

Now, I want to ask you how many thousands of lives are we going to lose if we buy this same truck and put it in our service when we have to go forward in Europe? We will find conditions there that will make the roads in Mexico look like boulevards. Then, if we buy this truck, and put it in that service simply because it has made good over these good



A Good Number Took Part in the Electrical Equipment Deliberations



The Informal Committee on Wheels for the Standard Truck

lines which have been maintained back of the front and we try to go forward and find we cannot, and we get thousands of our men killed, because we depended upon something that was designed for good roads, simply because it had been done, what are they going to say to us then? They will say, "Why didn't you realize we were going to go up against conditions that had not been met before? Why didn't you furnish us with trucks that had exceptional going ability, that were designed at least for conditions in Mexico, which conditions could not have been approached here?" What will they say to us then about the loss of these thousands of lives,

Everybody who is anybody in the truck industry reads the CCJ

simply because of our plain neglect to do something that was very evident? We are not going to have that kind of truck. We are going to have trucks with the very maximum of going ability. And when we need to go forward, I admit that the railhead will be advanced as far as it can, but there will be the continued use for trucks of the very maximum of going ability, to get these supplies to the men at the front.

Now, we are going just as soon as we possibly can, to obtain trucks that all engineers in this country will admit are right for our service; and then, when the time comes to get our men to the front and we make our drive, we will be prepared; for we are going to drive the Germans out of those trenches; we are going to drive them right back into Berlin; and we are not going to depend on any of your commercial trucks to do it.

### Discussion

D. S. LUDLUM (AUTO CAR CO.): May I ask one question to clarify this situation? You stated you are not going to require these trucks in a hurry. Some of us executives, when we got the bids last May, in reading the bids thought you required 26,000 trucks between July 1 this year and July 1 next. Can you help us on that point, where we have to purchase merchandise so far ahead and do our planning? This is July 20. Are you not going to require those trucks in that time, as that bid indicated?

CAPTAIN BRITTON: There is a question as to the total number of trucks that will be required. Present estimates are based upon the present military program, no doubt, which I believe is on about 2,000,000 men, from 30,000 to 50,000 motor trucks. I think we may well depend upon it that when we get started 1,000,000 men is not going to start to tell the story, but

trucks required to justify them in making the very large expenditure necessary to produce all the tools, jigs, fixtures and other machines to produce these trucks in quantity. There will not be any question about that, I am sure, as to the desirability of furnishing all of that equipment necessary to produce their trucks. But, of course, the first thing we must decide upon is what the trucks will do. We will have to buy the ordinary standard commercial truck which will most nearly meet our specification requirements up to the time when we can obtain these standardized trucks, which we will admit and which all of the rest of the automotive industry will admit are absolutely right for military service.

A. G. BRASSEAU (INTERNATIONAL MOTOR CO.): I am interested in the remark you

CAPTAIN BRITTON: No, I do not think he would be justified in doing that at all. I think that the proper program would be this: We want to co-operate with all of you to the limit. We want every bit of help you can give us.

The first thing that is to come up is our designs to see what this truck should be, based on our own experience and on yours. Let us get the design up just as completely as possible, and all agree on that design. Then let us go to any expense that is necessary to produce a number of those models, a number of those engines, a number of those trucks, not to make the dies and all the tools necessary to produce these trucks, but to make them like you build a house. Let us get them out and thoroughly try them out, and eliminate all those details which we know come up un-



Ball and Roller Bearings Division of the Columbus Conference

just made that you believe that the manufacturers of what is known as the present commercial truck would be justified in tooling up and complying in every respect with the recommendations of this board that you will appoint to design the truck.

CAPTAIN BRITTON: Yes.

der service, and then, as soon as we have got that thoroughly threshed out, we can then in the meantime get you all together; possibly by that time we will have a little clearer idea about the requirements that are going to obtain. Now, who is most able under present commercial conditions to go into the manufacture of those trucks? Who do you think would be justified in putting in the necessary machinery to produce this truck? We do not say everybody must jump into this work and put in tools for the production of the truck, irrespective of agreement. That would be fatal, because you would have a dozen manufacturers tooling up for the production of some particular unit, and you would completely over-tool yourselves. We do not want that. We want you to get together and decide who best can produce these to advantage and who can best put in the complete tool equipment to produce these and reasonably absorb the expense of the tooling in the production, and that must be done after a conference of the executives.

MR. BRASSEAU: I understand the plan is that the units will be interchangeable, locating surfaces and things like that; is it also your intention, or do you expect that the parts of these units entering into the units also will be interchangeable?

CAPTAIN BRITTON: That is the program. The real program is to carry this standardization to the limit, the final limit; get each of these units. For example, the gearset manufacturers or Committee on Gearsets have agreed on a gearset which they will



Transmission Division With General Manager Clarkson and Captain Britton

rather that we will double or treble that number. I know nothing definitely about this; I am simply expressing a personal opinion. But it is evident that we are going to require many thousands of motor trucks. There will be a sufficient number of trucks to more than justify some of the large manufacturers in completely tooling up for the manufacture of this standardized truck when it has finally been decided upon. That is a pertinent question. They must know that there will be enough

MR. BRASSEAU: It will cost the average manufacturer \$100,000; supposing that all or half the manufacturers went ahead with the idea that the Government would need enough trucks to give everybody who had tooled up enough business to pay for those tools. Do you think the manufacturer would be justified in going ahead with this expense for tooling without having some idea at least of whether the Government intended to give him some business?



manufacture and which will be interchangeable in every one of its parts. We want to carry that same program through every individual unit in this truck. That is the most desirable thing. If we find it impossible to do that all the way through up to the time we can get a reasonable quantity when we need them, we might leave one unit out for a few of these things, and make it interchangeable, and then keep on working and finally standardize it as closely as possible; get that worked out; if it requires additional tests, make them and determine what is needed; in the meantime use tried and proved units in that assembly until you can get those that are thoroughly standardized.

Here is the program: Get these committees together and arrive at a tentative line-up or lay-out for the whole thing, a tentative design on all of these units, along which lines these committees are specialists, to get this all on paper just as quickly as possible. When that is done, it will be desirable to get the consultation of the best engineers to go over these plans, to make suggestions regarding their modifications, go through them from start to finish, make any suggestions regarding any changes which may come to mind; and, if they appear plausible, make those changes; and finally arrive at a design on which they will be agreed as the proper thing, and

to incorporate in those designs only those features of construction, only those factors of safety and strength of parts all the way through that they have known to be right.

There will be little details of connections to parts here and there that they will find can be worked out better in the assembly. After they have constructed the thing they may find that one part will interfere more or less with another and little modifications in the design may be found necessary to correct that difficulty.

MR. BRASSEAU: I would like to ask if the individual parts can be made in a number of different shops so that on the battlefield they would be interchangeable as repairs for a complete unit or assembly.

CAPTAIN BRITTON: I do not believe there is any difficulty in making those parts so that they are interchangeable. The whole question is this; after we have got the tentative design complete and all agreed upon then we want to get the various manufacturers together. Now who can complete this to best advantage? Whose manufacturing processes are the same so that they are making these parts in exactly the same manner. And they will not make these things and no one else.

ALVAN MACAULEY (PACKARD MOTOR CAR Co.): Before you adjourn may I say one

thing? In listening to this discussion wherever there has been a difference of opinion expressed at all it has seemed to me to be based on a factor which was not generally understood and which Capt. Britton has made clear. That is to say that there is ample time to engineer carefully and thoroughly with the aid of all of the talent of the United States and to thereafter test out thoroughly and completely a truck designed especially for the Government service. I think that every one of us will admit that with ample time a better truck can be designed for Government service than has ever been designed. It was only the question of time that was misunderstood. With the time and with a truck turned over to us having the approval of the best talent in the country you can count on the best co-operation of every manufacturer I am certain.

CAPTAIN BRITTON: I am sure of that.

MR. LUDLUM: May I ask Capt. Britton one question? Is that official engineering committee you speak about to pass upon it going to be a large one or a small one?

CAPTAIN BRITTON: The official committee has not been decided upon, but the tentative committee is, of course, to work at present and just how the program will be finally decided has not yet been determined.

## Motor Trucks Gaining Friends in Leather Field\*

**M**OTOR trucks are steadily growing in favor in the hide, leather and shoe industries. The period of experiments in power wagons has been succeeded by thoroughly reliable and dependable trucks operated by gasoline and electricity. Tire making for motor trucks seems to be an exact science. And the motor truck manufacturers, to their credit be it said, have so simplified, but strengthened their trucks that, while easy and simple to operate, they are highly effective and satisfactory.

Motor trucks are competing successfully on short hauls with the railroads. A haul of 50 to 100 miles is not exceptional for a motor truck, although the average trip distance traveled by them is much less. Merchandise delivered to a freight warehouse these days may take weeks before being delivered to the consignee, although the distance might be only a few hundred miles. Preferred freight is one of the results of war legislation.

Freight car progress is very subject to the lingering disease known as congestion on the road. And stuff usually has to be hauled to and from freight depots at both ends of the trip.

Motor trucks are the willing giants of the industrial world. When loaded at a factory they go steadily on their way, seldom halting. Delivery can be accurately forecast to the great comfort and convenience of all concerned.

In 1912 it is said that the entire motor

truck industry in the United States produced only 15,000 trucks. The output of 1917 will be vastly ahead of this record.

Manufacturers and merchants have to consider and study every improvement presented to them that may tend to greater efficiency and economy. Those who have much hauling to do will naturally seek for experiences of those who are using auto trucks in place of horses.

Here is interesting testimony as to the growing popularity of power wagons from a New York haulage contractor, who has operated at times as many as 500 horses: "Getting rid of horses will give me ten more years of life. They were a constant source of racking worry. Something was always going wrong. They got sick, collapsed or died when I wanted them most. The drivers were not reliable. We had to take any kind we could get in a pinch. Hot weather or snow put the animals down and out. With motor trucks we have a comfortable, scientific delivery. We figure on jobs we couldn't tackle with horses. We go to places beyond horses' reach, and thus get profitable new business. Suburban Brooklyn and Staten Island are easy. In frequent trips on a rush job we once in 11 hours covered 164 miles on a job at Flushing. It's a joke even to consider horses doing anything like that."

Motor trucks are rising rapidly in popularity in New England. For instance: Boston is surrounded by centers of manufacturing on the north and south; it is easy for power trucks to be sent from outside towns to Boston, and this method is commending

itself to the close figurers in New England.

Motor trucks do not work on any schedule of union hours. The drivers may have fixed hours while the truck stands ready for two or three shifts of men and can get along without holidays. With the improvement in roads throughout the country, motor trucks are becoming more and more indispensable, owing to their speed, convenience and reliability.

Manufacturers, wholesalers and dealers who are willing to investigate the merits and economies of motor trucks, can get very interesting and instructive details. Motor truck makers are quick to show comparisons between horse operation and truck operation. And it may be said that the business men who start using trucks without delaying for some future period, will get valuable experience with each year and be better equipped to take advantage of the constant improvements that are offered by motor truck makers.

Hides, leather and goods made from leather, are usually pretty heavy to haul around. Some men have a warm spot in their hearts for horses, which often are punished in drawing heavy loads long distances, in high or low temperatures, and are being more and more employed for lighter work with less strain and wear. And motor trucks are producing a good class of truck drivers. Their wages are probably higher than paid to drivers of horses, but it is economy to hire experienced drivers so as to economize in operation while getting all the work possible out of the truck.

\*Reprinted from Hide and Leather, July 14, 1917.

# Tanks, Tents and Trenches

## Chicago High School Cadets' War Maneuvers

By GEORGE BROWN

**A**T THE Chicago Motor Derby on the Speedway, June 16, trench warfare was demonstrated by 3000 high school cadets, a "tank" and real trenches; the latter had been excavated for the mimic battle which was a part in the program for the spectators of the Motor Derby.

The contestants which an interested onlooker termed "Our reserves of 1921," had been instructed in the modern war game by regular army officers. They were apt

pupils, putting on a most realistic exhibition and covering themselves with glory, mud and smoke. The attacking forces were transported to the scene of action by motor trucks and, prior to the forward movement, artillery fire kept the enemy from receiving reinforcements. Land mines exploded with terrific detonations, increasing the realism of the spectacle. An explosion of a bomb was the signal for the charge and it surely looked like the real thing when through the smoke those gray uniformed



Type of "Tank" Which Participated in the Chicago High School Cadets' Sham Battle at Speedway Park, Saturday, June 16



Segment of French Trench Showing Advancing "Tank," Which Was Duplicated at the Maneuvers at Speedway Park

"A little knowledge is a dangerous thing." The CCJ keeps you fully posted

schoolboys were visible advancing across "No Man's Land" toward the enemy's trenches. Aided by barrage fire they broke through the barbed wire entanglements and with fixed bayonets captured the first line. Spitting fire from both sides a huge "tank" came to their support, the second trenches were taken and the maneuvers were finished.

It was called the Battle of the Somme and the mimic war spectacle was staged for the benefit of the various war causes.

## British Methods to Increase Haulage Efficiency

One of the greatest economic handicaps that freight transport of nearly all sorts has to meet lies in the difficulty of securing regular return loads. In fact it would not be exaggeration to say that at least 33 per cent. of commercial car mileage is run at a loss for this reason, if a world average were taken. Any steps therefore to remedy or lessen this loss constitutes an attempt at reform on a big scale, and the course of such efforts are particularly worth studying. For this reason the system, which has been introduced by the British Ministry of Munitions in the Birmingham district, should be watched with particular care, for obviously the return load question can only be dealt with by co-operation, and co-operation on such a big scale can only be achieved immediately by a big Government department.

At present the munitions people are advertising in the Midland papers to call the attention of manufacturers and traders within a radius of 25 miles from Birmingham that freight of any kind except dangerous articles can be conveyed by automobile between any points in the prescribed area at low charges. Thus Government controlled vehicles are being utilized to help the private business of the country.

## England Will Need a Large Supply of Tractors by Fall

To increase the farm area available for Fall and Spring planting, England will need a large number of farm tractors by Fall. The Ford Co. has been asked by Great Britain to hurry this production of tractors so that they will be ready for use when needed. The Ford Automobile Co., of Great Britain, will build many. One of the buildings is already well under way, with other sections of the Cork factory ready to be started. It is expected that an output of 50,000 tractors a year will be reached in about 8 months, but before that time there will be a productive ability of 10,000 per year. A great many tractors will be shipped from the Ford plant at Dearborn, Mich., which will be in operation in a month or so.

HOLLY BROS. Co., of Detroit, will establish a plant in Coventry, England, where the Holly vaporizers for Ford tractors will be made. They will be supplied to the English Government at cost. Arthur Dugrey is now in England in charge of the project.



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## The Standard Military Truck

NOTHING could give us greater satisfaction at the present juncture than to be able to announce as on the first pages of this issue that the Government officials and truck and parts makers have arrived at an understanding over the contemplated standard form of military truck. We commented in this column last month on the questionable advisability of attempting standardization while the getting of enough trucks of any sort at all that would do to fill our instant requirements was a problem. Now it has been made plain, as related on the other pages, that the Government is fully aware of this necessity and is not planning the use of any but stock cars of the most suitable makes until it can painstakingly but with all the celerity possible carry through the standardization program and adequately test out the decided-upon form of truck before putting it into the field

or even beginning its manufacture on the large scale necessary.

We are fully convinced of the wisdom of the plan as we now comprehend it, as indeed are all of the authorities who have been against the standardization idea. The desirability of a standard truck has not been in question, but only the possibility of getting it in time without jeopardizing its chance of being all that might be desired. Since it appears that the Government intends to take the time necessary, meantime supplying itself with sufficient for its purposes from the best that is already available, there are no longer two sides for debate.

It now only remains for the industry to lend its co-operation in both parts of the Government program. At no time has the expectation that it would be seriously doubted, and now that it will give its utmost support it is a foregone conclusion.

## Regarding Tractor Design

APPARENTLY the tractor must go through a corresponding evolution to that of the "horseless carriage" before it became an "automobile." In spite of the experience had in passenger and commercial car design the tractor even in internal combustion engine types is still hardly less crude than the old steam tractor from which it is descended. This was one of the outstanding impressions of a visit to the tractor demonstration at Fremont, Neb., last week.

Why it should be necessary to go back and begin all over in designing a farm tractor when fundamentally it is so similar to a road car is hard to understand. It is not to be expected that a tractor should resemble an automobile, in fact it is a mistake to seek to imitate it, for the character of service expected of a tractor is radically different and calls for special qualifications in certain of the parts. Nevertheless they roughly go together in about the same relation and it should be possible to combine them so that, if not beautiful (for looks do not count and "handsome is as handsome does") they can at least look "to the manner born" and be arranged with some regard for the man who repairs and keeps them in order. A singular truth is that both good looks and accessibility are hard to find in one machine. If compactly designed and shipshape the most minor repairs may require almost a complete dismemberment and if all parts are easily "getatable" for adjustments and replacements the general effect is usually really grotesque.

We are standardizing rapidly for quantity production, airplanes and military trucks. Next in importance for a speedy ending of the war in the Allies' favor are capable tractors and enough of them. On another page is the statement that France needs 20,000, and this is the only country to furnish them. That other foreign nations are looking to us as the logical country to develop and furnish the most suitable power equipment for intensive farming is also shown in the presence at Fremont of representatives of several European countries, particularly those where agriculture is a leading industry such as Russia, Norway, Switzerland, England, France and Italy.

With the world looking to America to produce the best in tractors we must feel our responsibility to make no false starts and put out no misfit machinery. Perhaps one trouble has been that few tractor engineers have graduated from the automobile and motor truck field. The S. A. E. now being

All phases of the truck industry covered best in the CCJ

"automotive" instead of "automobile" engineers only, there should be a get together of designing ability that would enable the tractor work to begin with the benefit of all the knowledge already gained in building motor cars and not go over any old ground.

### Co-operative Delivery

**A**T the Editorial Conference of Business Papers at Washington, D. C., May 25, "to promote the more effective use of the business energies of the country by a close co-operation of the business press with the Government," those participating pledged their help. **THE COMMERCIAL CAR JOURNAL** is glad to do its "bit" by publishing such messages as the one from the Committee on Public Information by Ida M. Tarbell, printed on another page under the title "Reducing Delivery Costs a Patriotic Duty." While a bit general in its application the subject in this instance happens to be in our field, but we shall not hesitate to use matter that seems foreign to our pages if we feel that it will help spread any information that may directly or indirectly aid the country in prosecuting the war.

Some may apprehend that urging people to carry home their small bundles and preaching the advantages of co-operative delivery will be hurtful to the commercial car trade. Even were this true we should still feel it our duty to spread

such propaganda, although we would be subject to the criticism of ignoring the best interests of our field.

It cannot be shown that it will help the trade to have shoppers carry their own small packages, but this is only a war-time economy anyhow. Co-operative delivery, on the other hand, will make more business for the commercial car manufacturers.\* Just as the introduction of type setting or casting machinery did not throw a lot of compositors out of employment but created so much more demand for printing that more men are employed in that craft today than ever, just so co-operative delivery will open a field for motor equipment that did not before exist. Merchants who can afford only a single horse or maybe no delivery facilities of their own so that they have to hire express or messenger service, individually would not be commercial car prospects, but several of them combining might use a sizable fleet.

Experience has shown that the obstructionist to progress suffers for it eventually and, as greater efficiency of any kind is an advance, more economical delivery methods are a forward tendency. Those in the trade who ally themselves with the movement will profit and those who oppose it will only dig pits for themselves. Our readers may, therefore, expect to read more on the subject of co-operative delivery from now on, for we have had staff contributors canvassing the field for some time.

### Market for Automobile Trucks

(From Government Commerce Report.)

The Assembly of the Colombian Department of Magdalena has given a twenty-five year concession to Mr. Guillermo de la Hoz, of Banco, Colombia, for an automobile truck service, for passengers and freight, between Banco and El Paso. Banco is about 200 miles above Barranquilla on the Magdalena River and El Paso is some distance inland from Banco. It is understood that two trucks are to be placed in service.

A 4,288-mile trip from Canada to Mexico and return, under the supervision of First Lieutenant J. W. O'Mahoney, a former U.S.A. truck transport expert, proved conclusively the adaptability of the United States "Nobby" tread cord tires for motor trucks in military work. An increased gross mileage was obtained on almost impassable roads, the gasoline and oil consumption and depreciation lowered.

### Testing the "Nobby" Tread Cord Tire for Military Purposes



**Model AA Five-Ton Truck**

This five-ton truck is equipped with a Woods hydraulic hoist and a dump body. The details of construction are as follows:

The rear axle is the Sheldon W-50 model; the front axle is the same make with ball bearing steering knuckles; the engine is a Continental, Model E, subframe type; the clutch is a Hele-Shaw, multiple-disc type; the transmission a Cotta, with three speeds forward and one reverse; the drive, Hotchkiss; the frame, 7-in. structural steel, 240 in. long; the wheelbase being the standard 168 in.; and the steering gear is the Ross. The Corbitt Motor Truck Company, Henderson, N. C., produces this truck. The price of the chassis is \$4200 f. o. b. Henderson.

### Hood Service to Market Units

The Hood Service Bureau, of Detroit, has recently contracted to market the Royal unit for Ford cars. This consists of an attachment for converting a pleasure car into a commercial car and is manufactured by the Royal Motors Corp., of Detroit. The price of the unit is \$350 f.o.b. Detroit.

THE REPUBLIC MOTOR TRUCK CO., Alma, Mich., has a band which is composed of experienced musicians, all employees of the company and connected with the manufacture of Republic trucks. Many of the musicians have served in the renowned bands of international fame. The staff also includes a number of highly trained soloists. It is claimed that the Republic Band in instrumental equipment and completeness of its repertoire is unexcelled by any non-professional band in the world.

Advertising in the CCJ is memory insurance. "Out of sight, out of mind," you know



## Metal and Rubber Markets

### Supply of Steel Far Short of Demand. Embargo on Foreign Shipments

At present the embargo on foreign steel shipments means nothing. The mills are still so overcrowded with work for the U. S. Government and the Allies that outside shipments are practically at a standstill. Big orders placed by the U. S. Government and France have made the past week eventful. Also the order of the President prohibiting the export of steel to any nation, belligerent or neutral, unless it is to be used for war purposes, either directly or indirectly, and unless the shipment is approved by the U. S. Government. At present there is little steel offered for private enterprise. Quotations on August 7th were:

### Steel Products Prices

|                            |          |        |
|----------------------------|----------|--------|
| Bessemer billets, per ton, |          |        |
| mill                       | 100 00 a | 105 00 |
| Open hearth, per ton, mill | 100 00 a | 105 00 |
| Sheet bars, per ton        | 105 00 a | 110 00 |
| Forging billets, per ton,  |          |        |
| mill                       | 125 00 a | 135 00 |

### SHEETS

The following prices are for 100-bundle lots and over f.o.b. mill; smaller lots are \$2 per ton higher:

#### Blue Annealed Sheets—

|                |          |        |
|----------------|----------|--------|
| Nos. 3 to 8    | \$8 00 a | \$8 50 |
| Nos. 9 to 10   | 8 25 a   | 8 50   |
| Nos. 11 and 12 | 8 50 a   | 8 75   |
| Nos. 13 and 14 | 8 75 a   | 9 00   |
| Nos. 15 and 16 | 9 00 a   | 9 25   |

No. 17 and lighter gauges are based on \$6.50 a \$7.50 per 100 lb. for No. 28 Bessemer Black sheets.

#### Box Annealed Sheets, Cold Rolled—

|                                         |          |        |
|-----------------------------------------|----------|--------|
| Nos. 17 to 21                           | \$8 30 a | \$8 50 |
| Nos. 22 and 24                          | 8 35 a   | 8 85   |
| Nos. 25 and 26                          | 8 40 a   | 8 90   |
| No. 27                                  | 8 45 a   | 8 95   |
| No. 28                                  | 8 50 a   | 9 00   |
| No. 29                                  | 8 55 a   | 9 05   |
| No. 30                                  | 8 65 a   | 9 15   |
| Galvanized Sheets of Black Sheet Gauge— |          |        |
| Nos. 10 and 11                          | \$9 00 a | \$9 50 |
| Nos. 12 to 14                           | 9 10 a   | 9 60   |
| Nos. 15 and 16                          | 9 25 a   | 9 75   |
| Nos. 17 to 21                           | 9 40 a   | 9 90   |
| Nos. 22 to 24                           | 9 55 a   | 10 05  |
| Nos. 25 and 26                          | 9 70 a   | 10 20  |
| No. 27                                  | 9 85 a   | 10 35  |
| No. 28                                  | 10 00 a  | 10 50  |
| No. 29                                  | 10 25 a  | 10 75  |
| No. 30                                  | 10 50 a  | 11 00  |

Above prices are for Bessemer stock. For open hearth stock \$2 per ton advance is charged.

#### Tin—Mill Black Plate—

|                 |          |        |
|-----------------|----------|--------|
| Nos. 15 and 16  | \$7 80 a | \$8 30 |
| Nos. 17 to 21   | 7 85 a   | 8 35   |
| Nos. 22 to 24   | 7 90 a   | 8 40   |
| Nos. 25 to 27   | 7 95 a   | 8 45   |
| No. 28          | 8 00 a   | 8 50   |
| No. 29          | 8 05 a   | 8 55   |
| No. 30          | 8 05 a   | 8 55   |
| Nos. 30½ and 31 | 8 10 a   | 8 60   |

### IRON AND STEEL AT PITTSBURGH

|                                |           |        |
|--------------------------------|-----------|--------|
| Bessemer iron                  | \$55 95 a | 56 95  |
| Bessemer steel, f.o.b.         |           |        |
| Pittsburgh                     | 75 00 a   |        |
| Skelp, grooved steel           | 4 00 a    | 4 50   |
| Sheared steel skelp            | 4 50 a    | 5 00   |
| Ferro manganese (80 per cent.) | 400 00 a  | 415 00 |
| Steel, melting scrap           | 42 00 a   | 45 00  |

|                         |         |        |
|-------------------------|---------|--------|
| Steel bars              | 4 25 a  | 4 50   |
| Manganese ore, per unit | 1 00 a  |        |
| Tank plates             | 9 00 a  | 10 00  |
| Wire rods               | 95 00 a | 100 00 |
| Wire nails              | 4 00 a  | 4 50   |
| Iron bars               | 4 75 a  | 5 00   |
| Plain wire              | 3 95 a  |        |
| Plain wire, galvanized  | 4 65 a  |        |
| Cut nails               | 4 50 a  | 4 65   |
| Barbed wire, galvanized | 4 85 a  |        |
| do painted              | 4 15 a  |        |

Aluminum.—Interest shown in the metal is light at best and the market has weakened perceptibly. No. 1 virgin aluminum is now offered at 48c to 50c, pure remelt at 46c to 48c and No. 12 alloy remelt at 36c to 38c. The market may be quoted easy at these figures.

### Prices of Old Metals

|                      | Cents per pound |             |
|----------------------|-----------------|-------------|
| Copper—              | Buying.         | Selling.    |
| Heavy cut & crucible | 25.00a25.50     | 26.00a26.50 |
| Heavy and wire       | 23.50a24.00     | 25.00a25.50 |
| Light and bottoms    | 21.00a21.50     | 22.50a23.00 |
| Heavy machy. comp.   | 21.00a22.00     | 23.00a24.00 |
| Brass, heavy         | 14.00a14.25     | 15.50a15.75 |
| Brass, light         | 12.00a12.50     | 13.50a14.00 |
| Lead, heavy          | 8.00a 8.25      | 8.75a 9.00  |
| Tea lead             | 7.50a 7.75      | 8.00a 8.25  |
| Zinc Scrap           | 6.25a 6.50      | 7.00a 7.25  |

The buying prices are those which the larger dealers will pay; the selling prices are market quotations.

### Rubber Market Steady

There has been but little change in the rubber market, though the Ceylon rubber advanced but broke again. There has been little demand from the manufacturers. Quotations on August 4th were:

|                              |      |     |
|------------------------------|------|-----|
| Para—Up-river, fine, per lb. | 69 a | 69½ |
| Up-river, coarse             | 49½a | 50  |

|                                |      |     |
|--------------------------------|------|-----|
| Island, fine                   | 61 a | 61½ |
| Island, coarse                 | 30 a |     |
| Cauchó, ball, upper            | 42 a | 42½ |
| Cauchó, ball, lower            | 41 a | 42  |
| Cameta                         | 32½a | 33  |
| Ceylon—First latex, pale crepe | 64½a |     |
| Brown crepe, thin, clean       | 60 a |     |
| Smoked, ribbed, sheets         | 64½a |     |
| Centrals—Corinto               | 42 a | 42½ |
| Esmeralda                      | 41½a | 42  |
| Guayule, Satillo               | 40 a | 41  |
| Balata, sheets                 | 75 a | 77  |
| Balata, block Ciudad           | 68 a |     |
| Mexican—Scrap                  | 40 a | 41  |
| Frontera                       | 40 a | 41  |
| African—Massai red             | 50 a |     |

### DOMESTIC SCRAP RUBBER

|                     |      |    |
|---------------------|------|----|
| Boots and shoes     | 9 a  | 9¼ |
| Arctics, trimmed    | 7 a  | 7¼ |
| Tires—Automobile    | 7 a  | 7¼ |
| Bicycles, pneumatic | 4¾a  | 5  |
| Hose, steam, fire   | .. a | 2  |
| Air brake           | 5½a  | 5¾ |
| Inner tubes, No. 1  | 24½a |    |
| Inner tubes, No. 2  | 12¼a |    |
| Red                 | 12¾a |    |

AMERICAN TAXIMETER Co., New York City, has opened a direct factory branch for the sale and maintenance of the hub odometers, recordographs and taximeters at Monroe and Hastings Sts., Detroit, Mich., to be under control of Kenneth Jackson.

C. R. WILSON BODY Co. announces that their new factory buildings at Bay City, Mich., will be completed this week and manufacturing operations started before September 1st. This plant, which is especially designed for woodworking, will be instrumental in largely increasing the capacity of their different plants.



Contrast This With the Dark, Dreary Factories of Years Ago

An interior view of the J. N. Smith & Company's factory, Detroit, Mich., during the process of construction. The matter of interior light and convenience in manufacturing is intensified by the white enamel paint which covers the entire interior of the factory. The better the light, the more cheerful surroundings are for the workmen, and better work can thus be obtained.

### One of the Newest Type of Champion Spark-Plug Advertising Cars

One of a fleet which distributes window displays and other selling helps to Champion spark-plug dealers.

Champion spark-plug advertising cars, accompanied by display men, are now working in nearly every section of the country. One calls on a New England dealer at the same time another is making a display for some accessory store in California. While the Southern division is working along the gumbo highways and byways of Dixie, other cars are covering Michigan, Minnesota and other states in the North.



Merit wins—that's why the CCJ is the leader

# Reducing Delivery Costs is Our Patriotic Duty\*

Commercial Economy Board of Council of National Defense Urges Carrying Small  
Parcels and Co-operative Delivery as War Helps

By IDA M. TARBELL

(It is suggested that subscribers take this article home for the reading of their womenfolk—Editor.)

**I**F THE POWERS in Washington continue their investigations of the common practices of life we shall all of us very soon become very much ashamed of ourselves, ashamed of our easy acceptance of wasteful ways of doing things; ashamed of our lazy habits of letting others do for us what we might easily do for ourselves; ashamed of the intellectual shiftlessness which takes it for granted the way a thing is done must be "all right" or at least "good enough."

There is a group of zealous patriots at work in the government bureaus and in the Council of National Defense looking into the every-day habits of average Americans—not for the purpose of putting us to shame—though they are doing that—but solely to see where they can release men, money, energy for the appalling, the limitless needs of present-day humanity.

A world at war cannot tolerate sloth, waste, indulgence. Every needless activity must be suspended. We must get our lives onto a basis of needs—not of whims and self-indulgence. That is the meaning of the patient examinations of the way we do things which are being pushed by the Commercial Economy Board of the Council of National Defense. Their effective demonstration of the way we've been feeding tens of thousands of loaves a day of good wheat bread to pigs and chickens through these terrible years when Belgian and Serbian and Albanian and Armenian women and children were starving for bread, has made some people ashamed. Practically all the bakers of the country are cutting out that waste. It is only here and there that a baker is found who, in the hope of gaining a competitive advantage by turning his stale bread returns into chicken feed, fights the change. The women have been asked to take care of such. They will do it as fast as they discover them.

## Economy Board Shows Delivery Wastes

The same board which has rallied the women to co-operate in saving the wasted loaves, is calling on them now to co-operate in another saving—one vastly greater; one which if properly conducted will free not less than a hundred thousand men and a tremendous amount of equipment to be used where they are really needed.

Just as in the case of bread, this new saving comes through a reform in one of the every-day practices of life—the way we get our daily groceries, meat, fruit, vegetables. They come to us almost like the manna from Heaven. All you did in the case of manna, I believe, was to pick it up; all we do in case of our groceries is to ask for

them—ask for them at any hour of the day—a dozen times a day if we will—in any quantity, a box of matches, a half-dozen bananas, a pound of steak and, presto, it is put on the kitchen table.

The thing which takes no forethought on our part, which just happens, is pretty sure to be an expensive thing to somebody. Washington, in the interest of the great war, has been trying to find out what it costs to relieve the women of the country of the need of forethought in ordering, in making it possible for them to ask and get anything that they find they want for their households at any hour of the day. It's a big price we pay.

## What Delivery Costs Amount to

The Bureau of Commerce has found that in the city of Washington it costs 7.4 per cent. of the gross sales of food to pay for its delivery. On a food bill of about twelve and three-quarter million of dollars in 1916, Washington paid over \$900,000 for sending the stuff to the purchasers. Naturally it cost more to deliver some things than others. Ice, bread, milk, ice cream cost Washington most.

What is true of Washington is true the country over, so the Commercial Economy Board finds. It estimates that the gross delivery expense of retail grocers in the country is over \$75,000,000 a year. What is this sum used for? For the hire of men to put up packages, to run the number of wagons and trucks required, to put them in at your door, to go to your house not once but often a half dozen times a day.

Take any town of the country of ten thousand people and it probably is spending three per cent. of the net sales of groceries for delivery to the purchasers. Again and again these purchasers come to the grocery, the butcher, milk depots, in carriages or cars, but they rarely think of taking home their purchases. A woman will buy a package of ten-cent cereal and expect it delivered. She will rarely think of carrying a half dozen rolls, though she is on her way home.

As a matter of fact, the merchant does not often want her to carry her package. His promptness and willingness to serve her irregular and careless habits of buying is one of the ways he builds up good-will. Our canny merchants err in spoiling customers, in gratifying their whims, in fetching and carrying for them until a woman has come to feel sometimes that if she offers to carry a bundle she will be classed as an undesirable customer.

The great necessity on us demands a prompt, vigorous cutting out of the waste in all delivery of foods. I have spoken here only of food-products, but we all know that

what has been said applies equally to all sorts of shopping and particularly to department stores. The report of the Commercial Economy Board declared that in our great cities the cost to the department store of delivering packages is from eight to twenty-five cents apiece. It is no uncommon thing for the cost of delivering an article to exceed the cost of the article, and probably one-half of the daily purchases of a department store might be carried home by the women themselves.

How is all this vast, unnecessary use of men and horses and trucks and money and time to be cut out and the delivery system put on a rational basis where it is strictly confined to what is necessary?

There are not a few towns in the country where it has already been put on such a basis by co-operative deliveries. Ann Arbor, Mich., has had such a delivery conducted by its merchants for eight years. Formerly it took seventy wagons to carry home the daily buyings of the people—now it takes but eighteen. In other towns there has been a saving in cost of from twenty-five to seventy-five per cent.

## Co-operative Delivery Halves Costs

Wherever a co-operative delivery has been well managed the average saving has been around fifty per cent.

Of course this means a reform in the method of ordering. One delivery a day is all that ought to be expected under present conditions. If a woman knows that is all she will get she will quickly and easily reform her ways—or carry her extra bundles.

The Woman's Committee of the Council of National Defense firmly believes that all that it is necessary to do today to secure hearty and prompt co-operation from women in carrying out such savings as this, that their fellow-committee on the Council of National Defense has demonstrated to be possible, is to let them know that it is asked. It urges women everywhere to aid in the reform. They can very properly encourage their merchants to establish central or co-operative deliveries, and call on them to limit their deliveries to not over one a day on each route, cutting out accommodation deliveries altogether. They can discipline themselves to regular and thoughtful ordering. They can carry small packages. They can discontinue the wasteful practice of having goods sent home "on approval," which nearly always means waste effort in delivery as well as extra charges within the stores. In a certain department store with total annual sales of \$5,000,000 returned goods amount to twenty per cent., involving a waste of more than \$50,000 annually.

\* Furnished by Committee on Public Information and through the Editorial Conference of the Business Press.



# National Automobile Dealers' Association Organized

By GEORGE BROWN

**B**Y invitation and from no organization, although the Chicago and Milwaukee Automobile Trade Associations indirectly fathered the movement, about 150 delegates representing over 10,000 automobile dealers from all parts of the country met in Chicago, July 12, to form a national automobile trade selling body.

The meeting was in the convention hall of the LaSalle hotel and was temporarily organized to discuss and promote all matters for the future good of the selling end of motor vehicles. American-like there was some fuss until harmony was attained. Chicago, of course, apparently dominated through having the greatest attendance of delegates, Milwaukee was well represented also; then the magnanimous action of Chicago in withdrawing its voting led to harmonious action which resulted in permanent organization and the secure foundation for the future success of a national trade organization.

On account of the success of the Chicago Automobile Trade Association, the delegates took its workings, ideas and activi-

ties as models for the formation of a national body. An exchange of ideas was the program during the major part of the two days' session. Permanent organization was then effected and George W. Browne, of Milwaukee, was unanimously elected president. The other officers chosen are as follows:



George W. Brown, Milwaukee President

John H. MacAlman, Boston, first vice-president; F. W. A. Vesper, St. Louis, second vice-president; B. J. Ruddle, Milwaukee, secretary; J. H. Johnson, Boston; Geo. D. McCutcheon, Atlanta; A. E. Maltby, Philadelphia; W. G. Tennant, Chicago; J. A. Graham, Minneapolis; C. A. Forester, Cleveland; P. E. Chamberlain, Denver; P. H. Greer, Los Angeles; Dean Schooler, Des Moines, directors.

Chicago was unanimously selected as national headquarters, the treasurer's office will be located there and one of that city's veteran dealers, Thomas J. Hay, was elected as treasurer with another Windy City veteran, W. G. Tennant, as a director.

The constitution as adopted admits to membership wholesale and retail automobile dealers and factory branch managers.

The first move of the association is the launching of a campaign to change the rating of automobile depreciation from 10 to 20 per cent. in the pending war revenue bill, which plans to tax motor cars approximately one per cent. of the cost price less depreciation. A committee has been appointed to further the plan.



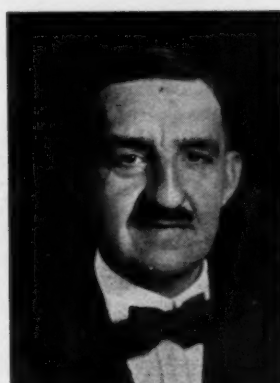
The Initial Gathering of the Newly Organized National Automobile Dealers' Association



John H. MacAlman, Boston First Vice President



Thomas J. Hay, Chicago Treasurer



F. W. A. Vesper, St. Louis Second Vice President



B. J. Ruddle, Milwaukee Secretary

## The War Department Places First Truck Orders

The first installment of truck orders by the War Department under specifications as recently prepared by the transportation branch of the Quartermaster's Corps of the Army, and later revised to meet demands of the manufacturers has just been let to the extent of 10,650 chassis. This order is only a "drop in the bucket" as compared to other orders which will come, however, different well-informed people predicting that a total of 100,000 trucks will be needed by the Government before the war is over.

The orders just given were as follows:

Packard, 300 of Class B, schedule L, and 1500 of Class B, schedule N, delivery at the rate of 500 a month beginning October next, at a price of \$3197.57 each.

Garford, 900 of class A, contract to be completed by the end of December, 1917; price, \$2730 each.

Jeffery Quad, class A, delivery as per the proposal of the Nash Motors Co., contract to be completed by July 1, 1918; price, \$2805 each.

Pierce-Arrow, 700 class A, the order to be increased to 800 if agreeable to the Pierce-Arrow Motor Co., and delivery to be in accordance with the proposal of the company; \$3500 each.

Four-wheel-drive, 3250 of class B, with the addition of rear bumpers and ordnance hooks; total, \$3248 each; and delivery to be the rate of 175 in August with an equal number each month until the contract is filled.

Locomobile, 400 class B, with electric light equipment; price, \$4224.57 each. 125 to be delivered in October and a similar number each month until the contract is complied with.

The National Army will be in the field by the first of September, and the National Guard by early in August. This means that the demands for motor truck equipment will be enormously increased, as the training camps of this country will have to be taken care of in addition to the regular army forces in France.

The fact that contracts were let to run up to July 1, 1918, indicates that the War

Department does not expect peace to come at an early date.

On July 24 the purchasing department of the Quartermasters Corps ordered 24,050 motor truck bodies. 10,000 went to the International Harvester Co., Chicago; 1900 to the London Auto Supply Co., Chicago; 500 to Mulholland & Co., Dunkirk, N. Y.; 400 to the Hercules Buggy Co., Evansville, Ind.; 550 to the Okundy Co., Cleveland, Ohio; 1200 to the Eagle Wagon Works, Albany, N. Y., and 2000 to the Continental Car Co., Louisville, Ky. The prices at which these orders were taken were not made public.

## Announced Increases in Prices

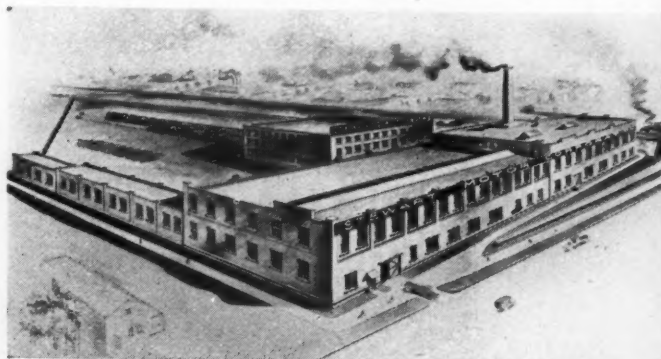
United States Motor Truck Co., Cincinnati, Ohio:

|                          |         |
|--------------------------|---------|
| Model                    |         |
| 2½-ton Chain Drive ..... | \$2,650 |
| 3½-ton Chain Drive ..... | 3,350   |
| 2½-ton Worm Drive .....  | 2,950   |
| 3½-ton Worm Drive .....  | 3,650   |
| 5-ton Worm Drive .....   | 4,550   |

The Edison Storage Battery Co., Orange, N. J., recently issued Bulletin 608, describing and illustrating their line of storage batteries for use in storage battery industrial trucks. This announcement should interest those seeking modern hauling equipment for coal and metal mines and industrial plants of all kinds.

## New Plant of the Stewart Motor Corporation, 413-423 Delevan Avenue, Buffalo

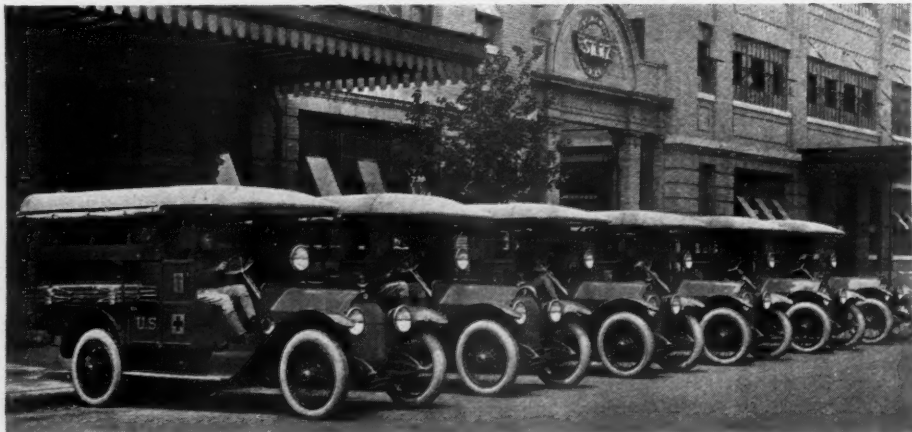
The plant was formerly occupied by the Stuhlman Mantel Works. The entire second floor, in the foreground, has been built during the past two months, so as to make it possible to have the executive offices of the Stewart Motor Corporation all together. The taking of this plant was necessitated by the great growth in the Stewart business. Recently orders have been coming in at the rate of fifty-eight per day.



## The Gibney Name and Assets Are Bought by Fisk

Through a deal made by the Fisk Rubber Co., of Chicopee Falls, Mass., the Gibney Tire & Rubber Co.'s name and assets have become part of the Fisk Rubber Co. This transaction assures the trade that Gibney tires will continue to be manufactured and in increased quantities. By this purchase, a solid tire which has made for itself a respected position in the trade goes into the hands of one of the largest manufacturers of pneumatic tires, and will supply the latter with a solid tire department which it formerly did not have. The output of the Gibney factory, in Conshohocken, Pa., will be tripled and the product will be known as the Gibney tire, made by the Fisk Rubber Co. The service stations conducted in a number of cities by the Gibney Co. will not conflict in any way with the Fisk service station system and will continue business as formerly. There will be practically no change in the Gibney organization save for the resignation of Jas. B. & John Gibney. The solid tire factory being built at Chicopee Falls, by the Fisk Co., is designed to take care of an output of 2,000 solid tires per day. As soon as this plant is in operation, the present necessity for night shifts at the Conshohocken plant will be eliminated.

HOUSTON-BUICK SALES Co., Houston, Tex., has taken the business of the Garford Motor Truck Co. in Houston.



## Six Motor Ambulances Presented to the Government by the Stutz and Parry Companies

The ambulances illustrated above were jointly presented to the United States Government by the Stutz Motor Car Company, which furnished the chassis, while the Parry Manufacturing Company built the bodies. The ambulances are completely equipped in every detail, including electric lighting and starting equipment, wire wheels, cord tires, searchlights, etc. The gift was purely a patriotic and unselfish one and exceeds by far any other such gift made in the Central States up to this time.

## F. A. Ames Co. Has Homecoming

The F. A. Ames Co., makers of Ford pleasure bodies and truck and commercial attachments, entertained its salesmen at a homecoming during the week of July 8th in Owensboro, Ky. The week was spent in entertainment and in going over not only the work that has been done during the past year, but the plans for the coming year as well. Each one of the salesmen brought in enthusiastic reports.

The rapid growth of the Ames Co. has been remarkable. For years known as the leaders in carriage making, the ever increasing popularity of motor drawn vehicles caused it to turn its attention to the manufacture of Ford bodies, truck units and commercial bodies, and being backed by a reputation built up by nearly half a century of leadership in its line, with a well-equipped factory and highly organized sales force, its success was assured from the very outset.

For its readers—information; for its advertisers—results. That's the purpose of the CCJ



## S. A. E. Military Motorcycle Standardization Work

A large number of important subjects were considered at the motorcycle meeting held June 28, at Washington, under the auspices of the Society, Standards Manager M. W. Hanks acting as chairman. It was decided to recommend that a military motorcycle rim should have 28 x 3-in. clincher tires and the standard cc section with 40 spoke holes 17-64-in. diameter, suitable for receiving the standard 1/4-in. nipple. All military motorcycle tires should be of the clincher type, 28 x 3 in. The rim and tire dimensions apply to front and rear wheels as well as to side-car and rear-car wheels.

The repair spokes for front and rear motorcycle wheels, as well as for side-car and rear-car wheels, are to be as follows: Length, 10 7/8 in. from neck of head to tip; total length of swedge, 2 in.; diameter of swedge, 0.135 in.; length of thread, 1 1/8 in.; number of threads to the inch, 40; diameter of head of swedge, 2 in.; diameter of head swedge, 0.135 in.

It was decided that nipples of the following dimensions should be standardized for all spokes: Length under head, 7/8 in.; thickness of head, 1/8 in.; diameter of head, 11-32 in.; slot in head, 1-32 in.; length of wrench surface, 9-32 in.; width of wrench surface, 0.212 in.; and diameter of nipple, 1/4 in.

The nipple is to be counter-bored to a depth of 5-16 in. in order to permit the spoke swedge of 0.135 in. to enter readily. The rest of the nipple is to be drilled and tapped for 0.135-in. swedge of 40 threads to the inch.

It was considered that the 18-mm. metric plugs should be standard on military motorcycles, but that the height of the plug above the threads should receive further consideration.

The lugs for attaching the head lamps for military motorcycles should have the following dimensions: Height, 1 1/8 in.; width, 1 1/4 in.; and hole diameter, 25-64 in. The minimum clearance from the center of the hole to the lamp casing should be 11-32 in. radius.

The prongs of the head-lamp for military motorcycles should have the following dimensions: Height, 1 1/2 in.; diameter, 3/8 in.; length of thread, 9-16 in.; number of threads, 24 to the inch, S. A. E. standard.

It was voted that military motorcycle driving chains should be of the roller type, 5/8-in. pitch, roller width 3/8 in., and diameter 0.40 in.

The throttle control on military motorcycles should be of a handle-bar-grip type,

placed on the right hand side, and operated to open the throttle by twisting the top of the grip toward the center of the motorcycle.

The spark control on military motorcycles should be of the handle-bar-grip type, placed on the left hand side, and arranged to advance the spark by turning the top of the grip toward the center.

The clutch pedal on military motorcycles should be placed on the left hand side and operated to release the clutch by pushing forward and down, clutching by reverse action.

The brake pedal on military motorcycles should be placed on the right hand side, and operated to apply the brake by pushing down.

It was voted that the gear-shift lever-handle should be placed on the left hand side and should be of the progressive type.

The kick starter on military motorcycles should be of the folding-pedal type, and operated by pushing down and back.

All oils and grease cups on military motorcycles should be 5-16 in. diameter, with 32 threads to the inch.

Fuel and lubrication pipes on military motorcycles should be 5-16-in. diameter. Fittings should be of the soldered type, with a 1/2-in. nut, 20 threads to the inch.

The total displacement of the cylinders on military motorcycle engines should be 61 cu. in.

It was voted that the maximum sprung load on military motorcycles should not ex-

ceed 500 lb., this including the weight of the operator. No load should be strapped or attached to any part of the frame of either the motorcycle or the side car.

Capt. Wm. M. Britton, Engineer of Motor Transportation of the Quartermaster's Department, U. S. A., attended the meeting and explained to those present the need for immediate standardization of military motorcycles. It is desired that as many parts and units be made interchangeable as possible. What is wanted is a construction that will have proved its ability to do the best and the most constant work.

The following were in attendance at the meetings: F. C. Butler, Jr., Wm. S. Harley, T. W. Henderson, C. O. Hedstrom, L. Ogden, B. F. Rogers, F. J. Weschler, Capt. Wm. M. Britton, General Manager C. F. Clarkson, H. L. Horning and M. W. Hanks.

War Department has ordered the following trucks in addition to the 10,500 recently ordered: Packard, 3000, B-type; Locomobile, 1250, B-type; Pierce-Arrow, 1500, A-type.

## Republic Dealers Have First of Series of Factory Conventions

General Sales Manager M. A. Holmes, of the Republic Motor Truck Co., Inc., brought together about 200 Republic dealers at the factory in Alma, Mich., during the week of July 16-21.

It was the first of a series of Dealers Conventions which the company has planned to hold. With more than 900 dealers, covering every State, it was deemed better to hold the meetings in sections, rather than to make one big national convention. In the smaller gatherings the Sales Organization has a better opportunity to become acquainted and there is more opportunity for a general participation in the discussion.

The affair was under the generalship of Mr. Holmes in which he had the co-operation of President Frank W. Ruggles, assistant general manager Lafayette Markle, and every member of the administrative offices.

The Republic band was present, 50 pieces strong, under the leadership of F. J. Major.

The visitors were taken through the factory plants No. 1, 2 and 3, and all the models were reviewed. These include the new Republic dump bodies and equipment, and the new special model 9, 3/4 ton chassis with the usual Republic 25 per cent. overload capacity.

A demonstration of Republic fire trucks completely equipped with the latest pumping apparatus was an interesting feature.



New Home of the Hay-Dee Extension

The Hayes-Diefenderfer Company, Incorporated, has opened the new salesroom and service station, shown herewith, at 1872 Broadway, New York City.



Those Attending the "Get-Together" Meeting of the Republic Truck Dealers at the Factory, Alma, Mich., from July 16 to 21

### Republic Rubber and Knight Tire and Rubber Merged

A great deal of interest was created in the trade by the announcement of the merger of the Republic Rubber Co., of Youngstown, and the Knight Tire & Rubber Co., Canton, O. Guy S. Norwood was recently elected president of the Republic Rubber Co. H. J. Woodward has become general manager of the merged companies; C. W. Hardin has been recalled to the factory to take charge of sales of mechanical goods; M. E. Murray has been placed in charge of the Chicago branch and Mark R. Roe brings to the engineering department a long experience in tire manufacture. It is understood that the combined companies will do a gross business of approximately \$18,000,000 the first year.

### The Burford Assets Are Sold

The Taylor Motor Truck Co. has purchased all the assets but none of the liabilities of the H. G. Burford Co., of Fremont, O., and beginning in January, will manufacture the Taylor truck in capacities of 1, 1½, 2, 3½ and 5-6 tons, and tractors up to 15 tons. It is expected that 200 trucks per month will be turned out.

Stanley W. Hull, Cleveland, Ohio, is heading a new mechanical drafting service company for inventors and manufacturers, known as S. W. Hull & Co.

For the past ten years Mr. Hull has accumulated practical experience in the engineering department of such plants as The General Electric Co., Westinghouse, Church, Kerr & Co., and The Brown Hoisting Machinery Co.

This staff will specialize in the design of mechanical and electrical devices and are authorities on limit systems for interchangeable parts.

### Rowe Calk Takes Over Diamond Chain Company

The Rowe Calk Co., of Plantsville, Conn., has acquired, by purchase, The Diamond Chain Co., of York, Pa., and the new officers of The Diamond Chain Co. are: president and factory manager, Samuel M. Horn, York, Pa.; vice-president, William H. McLaughlin, Hartford, Conn.; secretary, treasurer and general manager, Warren D. Chase, Hartford, Conn.; assistant secretary, S. Ralph Horn; assistant treasurer, E. S. Bestor, Hartford, Conn. The Rowe Calk Co. manufactures the widely and well-known Prest-O-Grip Anti-Skid Chains for trucks with solid tires. The Diamond Chain plant manufactures a fire welded chain, and at present has a capacity of over one million feet of chain. It is to be enlarged immediately to take care of the growing demand for Prest-O-Grips. The chain company will continue to sell its product in the general market.

### Three New M. & A. M. Members

At a meeting of the Board of Directors of the Motor and Accessory Manufacturers, the following firms were elected to membership: Anderson Forge and Machine Co., Detroit; The Taft-Pierce Mfg. Co., Woonsocket, R. I., and The S. K. F. Ball Bearing Co., Hartford, Conn. A. P. Sloan, Jr., has resigned as a member of the executive committee and L. M. Wainwright, president of the Diamond Chain Mfg. Co., Indianapolis, Ind., is his successor.

CHASE MOTOR TRUCK CO., of Syracuse, N. Y., has sold its Philadelphia branch, at 3607 Lancaster Avenue, to Richards-Kelly Co., and will continue the sales and service for the Chase Motor Truck Co., in connection with its regular business as motor hauling experts.

### Silvex Company Buys New Site

E. H. Schwab, president of the Silvex Co., makers of the Bethlehem Five Point Spark Plug, announced that his company has at last been able to secure a desirable site for the new plant. Such a location has been



Mr. E. H. Schwab

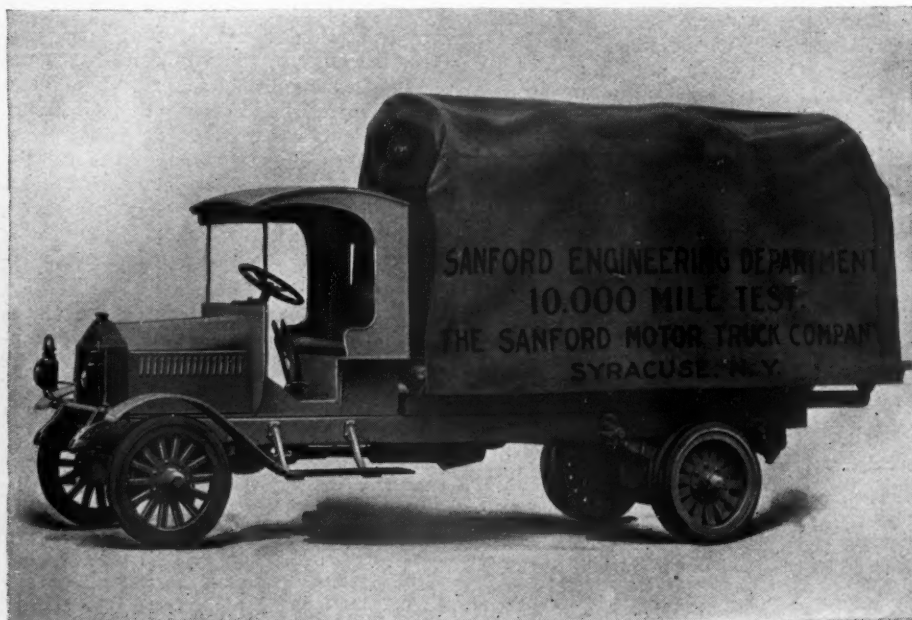
Brother of the well-known Schwab of steel fame. Mr. Schwab has written a new meaning into the word "Bethlehem," which characterizes the product made by his company—the "Bethlehem Five-Point Spark Plug." In spite of frequent additions to the works, production has, to date, been unable to satisfactorily cope with demands. With the completion of the new factory four times as much floor space will be available as in present works.

badly needed for months past, as the present factory is away behind in orders. The spot finally chosen and purchased is a tract of 10 acres immediately adjacent to South Bethlehem. Contracts for the erection of the new factory have already been given out. It is estimated that the new plant will have a capacity of 12,000,000 spark plugs.

CONTINENTAL MOTORS CORP., of Detroit, is making plans for the establishment of parts stations for its motors in Philadelphia, Chicago and Kansas City, to insure more prompt delivery of parts to distributors, dealers and owners of cars which are equipped with this motor. One of the principal objects in establishing these stations is to render to the vehicle manufacturers using its motor an effective aid in the promotion of its sales.

### Correction

In the June, 1917, issue of the COMMERCIAL CAR JOURNAL, page 52, the steering gear of the Master 2-ton truck was incorrectly credited. We are advised by the Lavine Gear Co., Racine, Wis., that the steering gear is of their make.



Sanford Truck, With United States Tires, Now Making Test Run Through Eastern Cities

The service manager of the engineering department of the Sanford Motor Truck Company, J. A. Nolan, drove this truck from Syracuse to Buffalo and then on by a devious route to Pittsburgh, Baltimore, Philadelphia and New York. It is built on approximate army specifications and is equipped with 36 x 5 in. single front and dual rear pressed-on United States tires.

Advertising appropriations bring greatest returns when expended in the CCJ



## Personals

Ralph Wells has been elected president of the Menominee Motor Truck Co., Menominee, Mich.

Forrest J. Alvin has been promoted from the position of general sales manager to that of general manager and director of sales of the United States Motor Truck Co., Cincinnati, O. He joined the company about a year ago.

Coker F. Clarkson, general manager of the S. A. E., and Herbert Chase, assistant secretary, have moved their offices from New York City to Washington and expect this arrangement to be permanent.

Geo. F. Cox has taken charge of the New York service department of the Chase Motor Truck Co., of Syracuse, N. Y., succeeding L. H. Tietge, resigned. Mr. Cox was formerly a member of the Chase organization in Providence, R. I.

R. J. Doty, who for the last three and one-half years has been in charge of the steel foundry of the Isaac Johnson Co., Spuyten Duyvil, New York, has severed his connections with that company to become associated with the Sivyer Steel Casting Co., Milwaukee, Wis. The latter company is enlarging its plant and installing an additional three-ton electric furnace to take care of its growing business among the motor truck, tractor and general machinery manufacturers.

Wm. F. Lehman, formerly with the Jeffery Automobile Co., has been appointed sales manager of the DeCozen Motor Car Co., Newark, N. J., selling Maxwell pleasure cars and trucks.

Otto Kauffman, formerly sales manager of the Rowe Calk Co., Plantsville, Conn., is now general manager of the Challoner Co., Oshkosh, Wis., manufacturer of Giant Grip for motor truck tires.

C. N. Newman has been appointed to the directorate of the Ohio Bethlehem Truck Sales Co., 1970 E. 59th St., Cleveland, Ohio, and will take an active part in the truck sales.

J. L. Olsen has become general sales manager of the Fageol Motor Co., Oakland, Cal. He was formerly general sales manager of the Troy Motor Sales Co., who handle Nash products in southern California.

John S. Speck, for six years factory manager for the Federal Motor Truck Co., has been appointed factory engineer and assistant to E. C. Shumard of the United States Motor Truck Co.

O. E. Stolly, formerly Philadelphia branch manager of the General Motors Truck Co., has been given charge of the New York branch.

J. G. Vincent, vice-president of engineering of the Packard Motor Car Co., Detroit, Mich., has resigned for the period of the war and is giving his attention to aviation work in Washington with the Aviation Signal Corps.

Chas. B. Warren, manager of the New York branch of the General Motors Truck Co., has retired to take charge of the distribution of Nash products in the eastern territory as head of the Nash Motor Car Co. of New York, under which the Nash wholesale business will be handled in the large and important eastern district.

H. J. Walker Co., of Cleveland, Ohio, has announced the appointment of C. A. Carey as director of sales and purchasing. Mr. Carey was formerly with the Chandler Motor Car Co. as purchasing agent. C. R. Armbrust, formerly assistant engineer of the Chandler Motor Car Co., has been appointed chief engineer.

## New Truck Agencies

Chicago Bethlehem Sales Co. has opened its headquarters in Chicago at 2241 S. Michigan Ave. The new company will handle Bethlehem trucks exclusively in the northern half of Illinois, Southern Michigan, Northern Indiana and Southeast Wisconsin.

Cohen Automobile Co., New Britain, Conn., has taken the agency for the Koehler motor truck and Burford two and four-ton trucks.

Cole & Dixon, New York City, have taken the agency for New York of the Smith-Form-a-Truck.

Collier Motor Sales Co. of New England has been formed in Boston, Mass., to handle the Collier ¾-ton truck, with headquarters at 102 Waltham St.

G. M. Head, Oklahoma City, Okla., has taken the state agency for Republic motor trucks, Allis-Chalmers farm tractors, Rodgers trailers and Davis pleasure cars.

Henley-Kimball Co., 652 Beacon St., Boston, Mass., with branches in the principal cities, has taken the New England distribution of Maxwell cars and trucks.

## Factory News

Day-Elder Motors Corp., Newark, N. J., at a meeting of the board of directors voted to pay a semi-annual dividend of 4 per cent. on its preferred stock, payable to stockholders of record June 30, 1917, such dividend to be paid August 1, 1917.

Elgin Tractor Corp. has arranged to move its plant from Elgin, Ill., to Piqua, O., where it has been given a 25-acre factory site, with one large factory built ready for occupancy and another provided for and which will be erected at once. Other units will be built as needed. There will be no material change in the management. The Elgin factory will continue to assemble until the Piqua plant is ready to operate, which will be in a very short time.

Kentucky Wagon Mfg. Co., Louisville, Ky., is making additions to its plant in the shape of forge shops, assembling shops, etc., to enable it to take care of the great amount of work with increased facilities.

King Trailer Co., Ann Arbor, Mich., has increased its capital stock from \$50,000 to \$150,000.

Service Auto Wheel Co., Grand Rapids, Mich., has filed voluntary petition in bankruptcy in the United States District Court, assets being \$1278 and liabilities \$1714, dated July 12, 1917.

Springfield Body Corp. stockholders have approved plans to increase the stock to \$3,250,000, of which \$750,000 will be 8 per cent. cumulative first preferred, \$1,000,000 will be 8 per cent. cumulative second preferred and \$1,500,000 will be common stock.

The Walker Co. has started operations on the new four-story reinforced concrete building, 220 ft. x 60 ft., as the first unit of a series of buildings to be erected within the coming year, which will increase the capacity of the present plant 200 per cent.

The Hayes Motor Truck Wheel Co., of St. Johns, Mich., has increased its capital from \$100,000 to \$500,000. It is now producing approximately 200 sets of wheels per day and with the addition of a few more machines will be in position to produce 500 sets per day.

The Amazon Rubber Co. at Akron is furnishing to dealers a new decorative hanger lithographed in eight colors. This hanger is on ten-ply Bristol board, has a silken cord for hanging, and will be furnished to dealers on request.



**D. W. Figgis**

For the past sixteen years with the American Can Company, has been elected president of the Smith Motor Truck Corporation, Chicago, succeeding E. I. Rosenfeld.



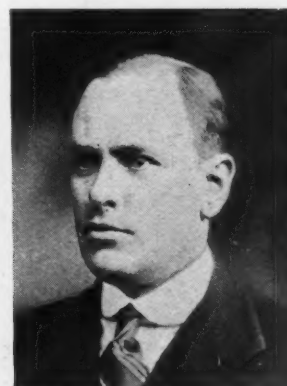
**Frederick Wright**

Inventor of the first non-sulphating storage battery; will have direct supervision of the manufacture of Permalife batteries, made by the Permalife Storage Battery Company.



**Lafayette Markle**

President of the L. Markle Company, Studebaker distributor in Chicago, has become vice president and assistant general manager of the Republic Motor Truck Company, Alma.



**R. W. Brouse**

Who has been assistant branch manager at the Philadelphia branch of the B. F. Goodrich Company, has been made manager of the Buffalo branch, succeeding F. E. Titus.

# Long Wheelbase on New Ford One-Ton Truck

By LEN G. SHAW

**T**HE long-awaited Ford truck, manufactured by the Ford Motor Co., is at last a commercial reality, with shipments of parts being made to the various assembling plants throughout the country, and production at the home plant reaching considerable proportions.

At first glance it is a bit difficult for the casual observer to distinguish between the Ford 1-ton truck and the familiar touring car and runabout model. Indeed, the newcomer is known as Model T, and the same as the firmly established passenger car, and upon examination proves to be a neat combination of the time tried Ford chassis and a worm-driven truck unit capable of carrying 1 ton.

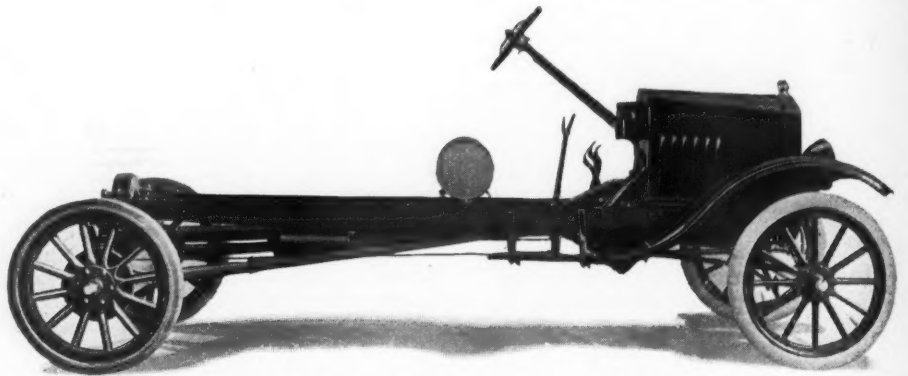
From the universal joint forward the chassis of the truck is the same as the passenger car, with the compact, clean-cut engine and planetary gearset. It is therefore back of this point that interest centers, and here it is found that a complete change has been wrought, with the exception of the semi-elliptical transverse rear spring. Even this has been made materially heavier, to care for the increased burden, and the suspension has been strengthened. The side members have been made heavier and lengthened to accommodate the new wheelbase, which is 124 in.—24 in. longer than the passenger car.

Reversing the usual order of procedure, and getting down to the new features of the truck, it is found that final drive is by direct shaft from the center of the chassis to the rear axle, only one universal joint being necessary, and this at the forward end. A ball and socket arrangement in this universal joint reduces shocks and strains occasioned by uneven roads. The drive shaft which operates the worm gear located on

top of the rear axle is enclosed in a tubular housing, the worm gear being protected in the same manner. The striking feature of this unit is its compactness, while it is readily apparent that nothing in the way of strength has been sacrificed. The ratio in the worm gear is 7.25:1, giving a total gear ratio in low of 19.9:1, and a total ratio in reverse of 29:1. From the worm the drive transmission passes through the bevel gear differential and semi-floating rear axle to the rear wheels. While following the es-

syphon, with tubular radiator and generous fan driven by a belt off the crankshaft. The single low tension magneto incorporated in the flywheel that has given such satisfaction in the passenger models is continued, two headlights being operated off this same magneto, as is the present practice with the passenger type. Side and tail lamps are oil burning.

The carburetor is a Holley, with a stove that clamps over the exhaust manifold and assists in heating the fuel on its way to the



Side View of the New Ford Truck Chassis

tablished design in a general way, this rear axle is of more generous proportions because of the work it will be called upon to do.

Driving torque is taken through the torsion tube surrounding the propeller shaft and substantial radius rods with pivot connections at the outer ends of the rear axle care for propulsion stresses.

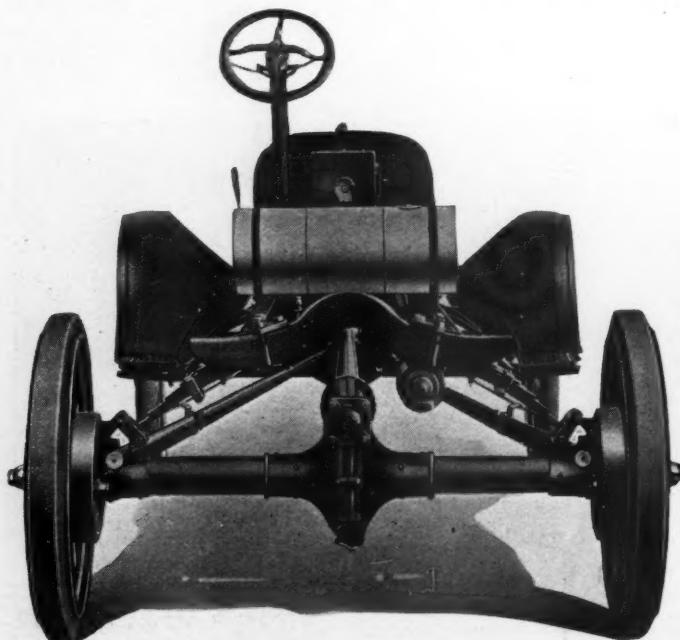
The engine is the familiar four-cylinder block unit, with 3 3/4 x 4 in. L-head cylinders, three-bearing crankshaft and spur-gear driven camshaft. Cooling is thermo-

cylinders. Fuel feed can be controlled from the seat by a spiral operating directly on the needle valve.

The standard Ford spur type two-speed planetary transmission is employed, with a multiple steel disc clutch operating in oil. The ease of control, which is entirely through pedals and the gas throttle, puts the truck in the same class as the passenger car, making it so simple that a novice can drive it. Lubrication is by gravity, the oil being carried to the front end of the engine and the timing gears through a tube by means of the flywheel, after which it returns by gravity to the flywheel casing at the rear of the crankshaft.

Although the Model T truck has a 124-in. wheelbase, with 56-in. tread, it will turn in a 46-ft. circle. The wooden wheels are of artillery type, with extra heavy hubs. Front tires are 30 x 3-in. pneumatic, the rear wheels being fitted with 32 x 3 1/2-in. hard rubber tires.

The Ford Model T truck, which sells for \$600, is furnished in the chassis only, it having been decided because of the multiplicity of use to which it will be put, and the tremendous demands that have already been made for the truck in this form, to do nothing in the way of supplying bodies.



Rear View of New Ford One-Ton Truck

It is the rear end of the chassis which differs from the Ford pleasure car chassis. The engine, hood and transmission being the same.

STANLEY MOTOR CARRIAGE Co., Newton, Mass., has discontinued the manufacture of special over-size chassis and power plants for commercial service and buses and will specialize on a single chassis with a wheelbase of 130 in.



# CHILTON TRACTOR JOURNAL

## How a Tractor Owner Plows for Others at a Profit

**C.** E. HEMPERLY, of Mesa, Ariz., where irrigation is depended upon, Salt River Valley. In any section was a pioneer tractor user in the tractor plowing is made more difficult by the "borders." These are ridges about a foot in height and 3 ft. or more in width which divide the surface of the land to be irrigated into sections which can be inundated separately. As plowing necessitates crossing these at every conceivable angle, as the tractor progresses around the field, the labor on the tractor is increased and its flexibility much more severely tested than on ordinary ground.

For this reason the Holt "Caterpillar" machine, the 22-45 h.p. type, was selected. The "Caterpillar" was also deemed advisable as plowing has to be done over ground recently irrigated. The ability of this type to negotiate the most uneven surfaces was strikingly shown at the receiving platform of the railroad when the first tractor was driven under its own power directly from the car to the platform over a gap of some 3 ft. or more.

Although Mr. Hemperly operates a good sized horseless farm for himself, yet he and his sons find time to do much work for others and have found it profitable. The

charge made per acre for putting stubble ground in condition is \$2.50, while for the more difficult Bermuda or alfalfa tracts \$3 or \$3.50 per acre is the charge. The farmers in the vicinity of Mesa claim that they cannot do it with horses for less than \$4 per acre. The fact must also be taken into consideration that the horse plowing does not average over 4 in. in depth, while that of the tractors averages 6 in.. The greater speed of the tractor is also an item as this plowing in high gear is done at the rate of  $3\frac{1}{4}$  miles per hour, or an average of about an acre and a quarter per hour. On the low gear the speed is  $2\frac{1}{2}$  miles per hour.



Two Views of the Holt Breaking New Ground  
Rear and side views of the tractor and seven disc plows, breaking new ground and making an eight-inch cut



Completing the Job at Once

This tractor, by means of a forty-two-disc plow and a drag, the whole operated by two men, is doing the work of twenty horses and tearing the ground in condition for planting.



Tractor Traveling Irrigated Ground

Soft, muddy ground has no terrors for the modern tractor. This machine is negotiating land but recently irrigated, disking and dragging at the same time. The ground as shown would be practically impossible for horses.

This gear has to be used on new land with a 7-disc plow, where the cut is 8 in. deep.

On custom work the tractors are kept going both day and night, using two shifts of men. Each machine is of course fitted with suitable headlights. Soft mud seems to be no great obstacle to these heavy machines, the secret being the fact that the 13-in. up to 28-in. track some 8 ft. in length results in not over 3 to 7 lb. pressure per sq. ft.

Under suitable conditions a 22-45 h.p. machine will pull a load which would require approximately 20 horses to handle;

for example, when discing Mr. Hemperly has pulled 42 discs and in addition to it attached to the rear a drag. The discs would have required about twelve horses and the drag eight. With this combination the ground is left immediately in suitable condition for planting.

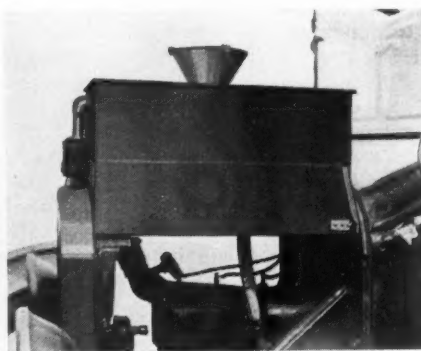
When the all important subject of fuel was mentioned Mr. Hemperly smiled and said, "We have something cheaper than kerosene. We burn 'tops' which we get from California. At the coast it sells for five cents per gallon, but here we have to

pay ten cents, while kerosene in bulk costs from fifteen to eighteen cents." "Tops" is a term applied to one of the many lower grade products of distillation of the crude oil and looks and smells like kerosene.

When asked about the wearing qualities, he said: "We ran the first machine 18 months without renewing any of the bearings of the caterpillar and you mustn't forget that the ground here is harder to handle than it is in Kansas, as it has a large percentage of clay, as shown by the adobe houses which we build from it."

## The Globe Tractor Attachment for Ford Cars

**T**HIS tractor attachment is designed to economically meet the demand for a power-farming machine. It can be readily attached to and detached from the Ford car, thus allowing it to be used as a pleasure car and also for odd farm jobs and as a tractor. It is made by the Globe Machinery and Supply Co., of 205-11 W. Court Avenue, Des Moines, Iowa, price \$295 f.o.b. The quick-attaching feature is made possible because the attachment extends under the full length of the car and is secured by three-point suspension. Neither screws nor bolts are removed from the standard Ford chassis and it is unnecessary to drill any holes. To attach, the car is first backed over the forward cross-bar of the frame of the unit. The frame is then raised and bolted securely to the rear axle by two "V"-bolts and a clamp, the front end being clamped to the front axle of the car. This device carries and pushes the car as well as pulls the plows, etc. An advantageous feature of this attachment is the raising and lowering quadrants which are a part of the Bull wheel axles on the sub-axle as shown herewith. With the Bull wheels in place a long-handled wrench is used to engage the worm gear and a few turns



The Auxiliary Water Tank Attached

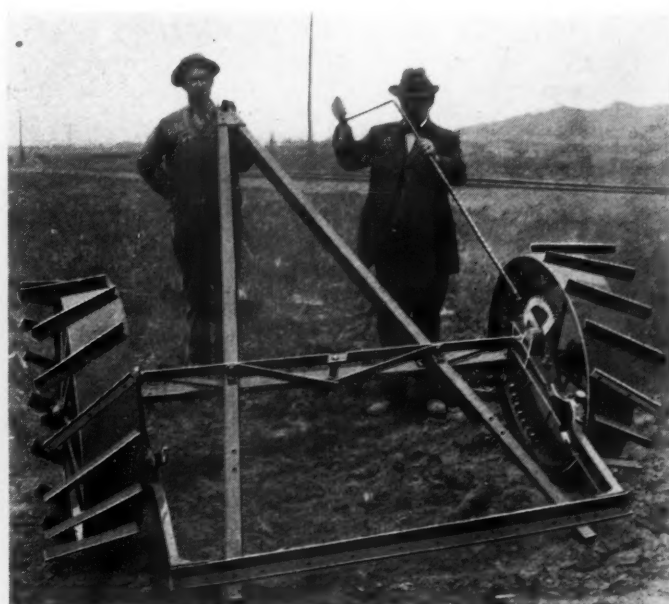
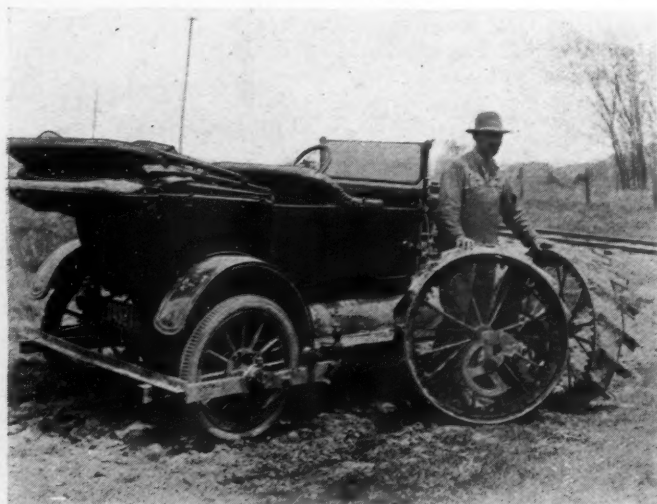
lowers the bull wheels to their driving position, as they enmesh the roller pinions of the driving shaft. In using the Ford as a pleasure car the frame of the attachment need not be removed unless desired.

Simply raising the Bull wheels permits the car to run on its own at its regular rate of speed, and the lowering of these wheels reduces the gearing 10:1 or from a 20 m.p.h. car speed to a 2 m.p.h. tractor speed. This is controlled from the driver's seat. A set of pinions can be had extra to give a reduction of 6:1 for road work. The

pinions are geared with rollers and automatically engage the gear segments in the Bull wheels when they are lowered to the driving position. The Bull wheels are placed ahead of the Ford wheels; thus they carry more weight and also permit shorter turns to be made. The attachment enables the Ford to pull two 14-in. bottoms, disking with a 16-section disk, harrowing, mowing, binding, etc.

To keep the engine cool when it is working hard has been accomplished by placing a specially constructed tank above the engine as shown herewith. A hood for the engine is made at the radiator top and the engine block. The tank can be removed by loosening these clamps.

REMY BROS. TRACTOR Co. has been formed with a capitalization of \$500,000 to manufacture tractors. A plant at Kokomo, Ind., will be built and negotiations for a factory site are under way. Frank and Perry Remy, formerly of Anderson, where they established the Remy Magneto Co., are president and secretary-treasurer respectively. Elwood Haynes, president of the Haynes Automobile Co., and A. G. Seiberling, general manager of the Haynes concern, are stockholders.



Two Views of the Globe Tractor Attachment for Ford Cars  
Above is shown the tractor wheels removed with segment gears. On the right the long-handled crank for raising and lowering tractor wheels.



## Novel Features in the Fageol "Walking" Tractor

**T**HE Fageol tractor, just placed on the market, is the latest product of the Fageol Motors Co., of Oakland, Cal. This company is the builder of the Fageol car, also the builder of the Fageol truck in a number of different capacities.

The Fageol "walking tractor" embodies distinctive features. It is small, light and powerful, making it especially adaptable for the orchardist and small farmer.

Perhaps the most distinctive feature is the novel but practical method of traction employed. The traction wheels—two in number—are so constructed as to "walk in and out of the ground." The long U-shaped prongs or grousers simply penetrate the ground's harder sub-soil, and in coming out break up the ground instead of packing it.

The wheels will negotiate any kind of soil—either wet or dry. It is impossible for the wheels to stick with mud. It weighs slightly more than a single horse and has the pulling power of four horses at the draw-bar.

The Fageol tractor "literally grew" on a California farm. The inventor, Rush Hamilton, is a practical orchardist and farmer of ten years' successful experience.

The Fageol tractor can be used profitably by practically every orchardist and small farmer in the country. The narrow width permits a center hitch for the plow, enabling it regardless of direction of plowing to get right up to the trunk of the tree without any side draft at all. In manipulation about the tree base this tractor is as flexible as a single horse. In fact the tractor and plow will turn in a 6½-ft. radius.

Interesting features of construction of this machine are the enclosed bearings, dust proof and running in oil or grease. Freedom from grease cups and from wear and tear of the excessive dust of orchard work upon exposed bearings effect a rare combi-

nation of advantages. An ingenious band is furnished to go over the lug on the driving wheel so that the tractor can be put in shape for road driving within a few minutes.

The entire machine weighs but 1750 lb. and develops four horsepower on the draw-bar. Transmission gears run in oil and are enclosed. The final drive is by internal gear. The pinions and the removable gears are accurately centered in the drive wheel

packing in all kinds of ground, are revolutionary in tractor design but have, nevertheless, proven very successful.

The following are the detailed specifications of the Fageol tractor:

The engine is four-cylinder with a 3½-in. bore and 5-in. stroke, developing 18.23 h.p. by the A. L. A. M. rating. Lubrication is by the splash and pump system.

The radiator is cellular type with large cooling surface. Water is circulated by



**The New Fageol is a One-Man Outfit**

It is capable of doing the work of four horses. It weighs 1750 lbs., and secures traction through sixteen V-shaped grousers

to prevent any side strain on the axle. The tractor has a speed of about 2½ m.p.h., which makes possible the plowing of about four acres per day with a fuel consumption of 1½ to 1¾ gal. per acre, depending on soil and depth of plowing.

The remarkable lugs or grousers of this model, affording traction without weight or

the thermo-syphon system. Air is circulated by a large fan.

The dust arrestor strains all air to the carburetor and removes all dust and dirt.

Ignition is by high-tension magneto.

The transmission has one speed forward and reverse and is equipped with radial type ball bearings. All cut gears and clutches run in oil in dirt-proof housing. Final drive is by Bull pinion and internal drive gears fully enclosed and running in heavy grease. The drive wheels are 46 in. in diameter, about 38 in. above ground when in operation. The traction medium consists of 16 "U"-shaped grousers, 10 in. long on each drive wheel.

The length over all is 100 ft.; the width over all is 41 ft. The turning radius is about 7 ft. For fuel it uses kerosene, distillate or gasoline. Its speed is 2½ m.p.h.



**A Close View of the New Fageol "Walking" Tractor**

Notice the V-shaped prongs or grousers, which penetrate the ground subsoil but do not pack it. Notice also the spring-mounted radiator, relieving it of possible strain

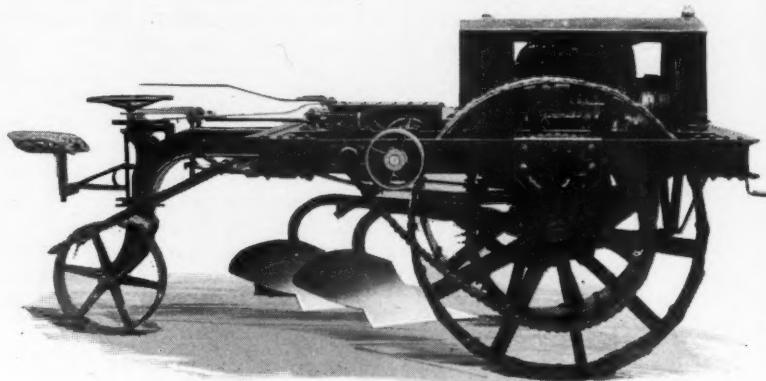
In a dynamometer test on the La Crosse Happy Model "B" Tractor, held recently, this tractor pulled a peak load of 3000 lb. and held an average of 2400 to 2700 lb. on a steady pull. The ground was pasture land grown up to weeds, and conditions were pretty wet, following a heavy rain in the forenoon. With cast iron spade lugs, the tractor pulled a No. 23 La Crosse tractor plow with three 14-in. bottoms plowing from 6 to 10 in. deep.

Opportunity comes to the well-informed. Read the CCJ

## Boring Tractor Carries Farm Implements

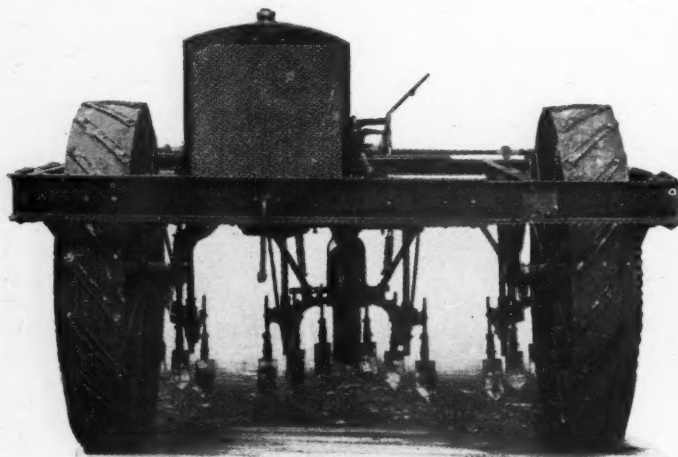
**I**N the Boring tractor the farm implements are carried or attached directly under the tractor and are in full view of the operator. This exclusive patented design of the Boring tractor permits it to carry a great many of the standard farm machines which ordinarily are pulled. The tools are easily and quickly attached and are lifted free and clear from the ground when not in use, or when carried from place to place.

The big feature of this machine is its adaptability to farm work of all kinds, whether it be plowing, cultivating, planting or operating from the belt. This machine will cultivate two standard corn rows at a time, using any standard type shovels. When the machine is used for cultivating the



**The Boring Tractor—A Carrying Tractor**

This machine carries most of the standard farm implements which are ordinarily pulled



**The Boring Tractor Ready for Cultivating**

The unusual vertical clearance permits cultivating practically the same as with a two-row cultivator. The cultivator shovels dig up the soil immediately after the wheels pass over it.

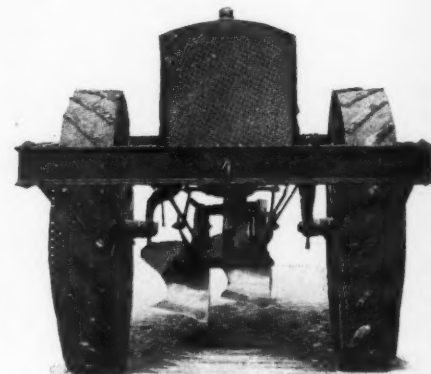
frame is widened and then securely locked to whatever position it may be open. The average time required for changing from cultivating to plowing or vice versa is about a half hour. The frame may be widened from 6 ft. 2 in. to 8 ft. 8 in.

### Exceptional Clearance for Cultivating

For cultivating work this machine has numerous advantages. In the first place, the

shovels track the wheels, immediately stirring up again the ground that may have been packed by the tread of the tractor. Because of the differential brakes and the pivoting of the rear end, the gangs naturally follow each other and are controlled exactly as though it were a horse-drawn two-row machine. It cultivates or plants two rows, pivots and goes down the next two

without having to swing past two rows to get into the straightaway. It naturally pivots (backwards) in the center of the rows and the distance of the rear wheel and the gangs is such that they swing clear of the hills and interline on the next two rows. Because of the exceptional vertical clearance, it can be used on crops as far advanced as will permit the use of a standard two-row horse-drawn machine.



**Front View of the Boring Tractor**

Note that the drawbar pull comes from the front axle



**Plowing With a Boring Tractor**

Note how the leveling feature permits raising the left drive-wheel to secure the proper plowing depth, since the right wheel runs in the furrow

As will be noticed from the illustration showing the tractor plowing, one wheel is dropped the depth of a furrow, thereby keeping the tractor level and insuring a level traction both in and out of the furrow. Although only two plows can be hung in the frame, the engine is sufficiently powerful to handle the plows under any condition. This sized engine, a four-cylinder,  $4\frac{1}{4} \times 5\frac{3}{4}$ , is generally used in a 3-plow job.

A patented pivoting device enables the operator to pivot the tractor right or left on either drive wheel, using but one lever. This same lever may be used for steering the tractor. Due to the peculiar manner in which the drive is applied, the tendency is to clamp both the front and rear wheels to the ground. When pulling a load the machine cannot rear or lift itself into the air. The machine is designed to handle two 14-in. plows at any speed from two to four

"A little knowledge is a dangerous thing." The CCJ keeps you fully posted



miles an hour. For plowing and ordinary work a normal gear is used. This gear transmits sufficient power to enable the operator, by merely adjusting the automatic governor, to plow his ground at its best turning speed. For extra heavy work and also for slow careful operations, as in cultivating, a special low speed or a bulldog gear is used. The speeds can be further varied by adjusting the automatic governor. A simple levelling device permits raising the left drive wheel to secure the proper plowing depth since the right wheel runs in

the furrow. For general pulling purposes a drawbar is provided. Where plows or other tools are not carried, they may be pulled behind. An easily dismantled belt shaft is provided for general purposes.

Standard engine,  $4\frac{1}{4} \times 5\frac{3}{4}$ -in. bore and stroke; length of tractor over all, 144 in.; width, 74 in.; height,  $74\frac{1}{2}$  in.; drive wheels 54-in. diameter, 10-in. face; Hyatt high-duty roller bearings; standard sizes are strictly adhered to in all nuts, bolts, screws, rivets, bearings and other small parts.

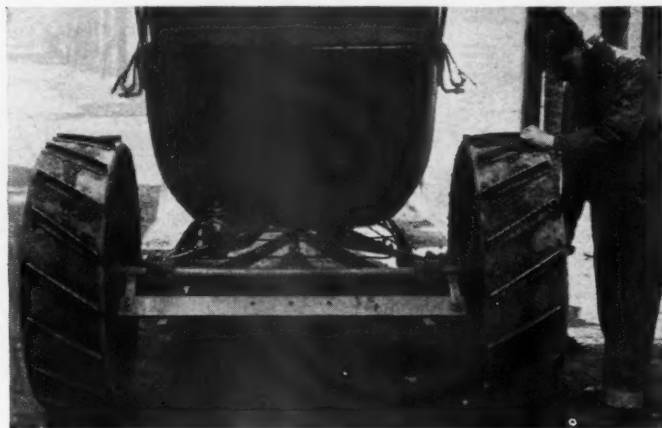
## The Smith-Form-A-Tractor

A comparatively simple attachment for converting a Ford car into a farm tractor has been brought out by the Smith Motor Truck Corp., Chicago, Ill. It consists of a channel section frame which attaches to the Ford front axle, extends under the Ford chassis beyond the Ford rear axle and is connected with a dead tractor axle made of 2-in. cold rolled steel, which is designed to receive two tractor wheels.

The attachment can be applied in a short time without boring a hole or changing the mechanical construction of the car. The Ford rear wheels are replaced with driving

which gives maximum traction with but little waste power and strain on the Ford engine. The side members of the frame, which are made of heavy channel section, are bent inward at a point beyond the muffler of the Ford car, converging at the front axle to which they are attached by a bracket.

By means of this construction the strain is removed from the Ford frame. Two push rods extend from the tractor axle to the housing of the Ford rear axle, so that the car is pushed ahead by the tractor attachment. A special cellular type radiator



The Smith Form-A-Tractor Attachment Fitted to a Ford Touring Car

pinions having key-ways to fit the keys of the Ford axle. These driving pinions fit over the brake bands and the brake drums, so that the braking function of the car is retained. Six rollers of tough, chrome steel are fitted on each driving pinion.

The tractor wheels, which are 10 in. wide to afford traction in soft ground, are designed with a bull gear made in eight sections. The teeth of this gear mesh into the roller driving pinions on the Ford rear axle, giving a bigger gear reduction. There are six rollers on the driving pinion and 64 teeth in the bull gear. Consequently an 11-to-1 gear reduction is effected. Each wheel is fitted with 27 conical lugs arranged in rows of three, which are staggered on the tractor wheels. These are easily removable when the tractor is to be operated on hard ground.

Inasmuch as the tractor axle is back of the Ford rear axle, the tractor wheels are pushed down, affording a down thrust

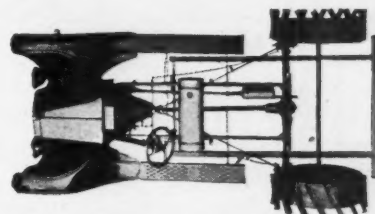
containing six times the cooling area of the Ford radiator is furnished with the Smith Form-a-Tractor. This is necessary, due to the fact that when used as a tractor the speed rarely exceeds 2 to  $2\frac{1}{2}$  m.p.h., while the engine is operating approximately 1000 r.p.m., or a speed sufficiently high to propel the Ford car 20 to 25 m.p.h. It is easily recognized that under such conditions the Ford radiator itself would be inefficient for the proper cooling of the engine.

A strong sight feed oiling system, with sight glass on the dash, is also provided. Both this oiling system and the radiator remain on the car, increasing its efficiency for pleasure driving as well as tractor purposes.

With this construction the Smith Form-a-Tractor runs on high gear at all times. In tests the Smith Form-a-Tractor is reported to have pulled two 14-in. plow bottoms in gangs at a rate of  $2\frac{1}{2}$  m.p.h., with the plow set 7 in. deep in virgin sod.

## The Horne Tractor Unit

Simplicity of its equipment and the short time involved in making the change should make the Horne quick-change tractor particularly adaptable at these critical times, when tractors are needed and needed badly. It is a simple and efficient method of converting a Ford into a tractor capable, it is claimed, of doing the work of four horses, and has just been announced by the Horne-Quick-Change Tractor Co., Thaw Bldg., Pittsburgh, Pa. Only a short time is required to change the Ford pleasure car into a tractor capable of pulling a gang plow at the rate of  $2\frac{1}{2}$  m.p.h. It can be used to cultivate, disk, pull stumps, haul crops, and



Horne Tractor Unit Attached

to do many other things. In addition, by the use of a high speed gear, it will pull products to market at a speed of 8 m.p.h. All that is necessary to remove from the Ford are the rear wheels and rear fender. No holes need be drilled, and no change in the regular Ford equipment takes place. The reduction in the speed ratio delivers the power of the Ford engine direct to the draw bar, thus greatly reducing road shocks. A special circulating pump is furnished with the attachment to prevent overheating.

Two hangers are suspended from the frame of the Ford, to which is attached a  $1\frac{1}{8}$ -in. cold rolled shaft, from which are suspended two I-beams, to which in turn, the draw-bar is attached by U-bolts to the Ford axle and the tractor axle. The frame work can remain on the Ford if desired without interfering in any way with the operation of the car as a pleasure vehicle, as the draw-bar does not extend behind the body of the car more than about 12 in., and acts as sort of a bumper. A cam or pin is attached to the rear axle of the Ford and this reverses upon the teeth inside the grouser wheels, decreasing the speed of the Ford from 20 to  $2\frac{1}{2}$  m.p.h.

The equipment sells for \$197 f.o.b. Detroit and weighs 770 lb.

THE TRACTOR BEARINGS DEPARTMENT, of the Hyatt Roller Bearing Co., at Chicago, recently held a sales letter contest in which \$200 in prizes were offered. During the contest the company furnished "Dealers' Helps" and their merits in promoting sales were also made a part of the letters. Among these was a watch fob bearing two Hyatt flexible rollers, set in a bronze frame, which was found to be effective in promoting interest in the bearings and tractors having them as regular equipment. John Lundhagen, of Fargo, N. D., was awarded the first honors and \$100; J. H. Parvin, of Hutchinson, Kans., won \$50, and J. H. Hazelwood, of Des Moines, Iowa, took third prize.

## Sidelights on the Fremont Tractor Demonstrations

**T**HE National Power Farming Demonstrations at Fremont, Neb., scheduled for August 6th to 10th, were delayed a few days on account of the severe storm that broke in that vicinity during the previous week. The rain was general throughout the corn belt section, and was the means of saving a billion dollar corn crop. Many of the exhibit tents were blown down on Saturday, which, together with the wet conditions of the fields, prevented the plowing until Wednesday afternoon. The rain, no doubt, was responsible for the somewhat diminished attendance on the first two days, as many of the farmers and visiting dealers, who would have driven over land in their cars, did not attempt to make the trip until the roads were in better condition. Despite the unexcelled weather conditions which prevailed during the last three days of the week, the crowd which was expected did not put in an appearance. The attendance fell way below last year's mark, and the only reason given for this lack of interest was that the farmer is fully convinced of the tractor's superiority and that the main thing is to buy the machine which is in keeping with his requirements.

From the spectacular point of view the demonstrations were absorbingly interesting. To the automobile dealer, to the embryo tractor farmer, or to the visitor who had never seen an event of this kind, there was much to see and learn. The first impression gained was that one attended an immense circus. There were about thirty tents on the grounds, two of which contained accessory exhibits, while the others were taken up by tractors and implements. Tractors of all sizes and shapes were to be seen. The implement trade was also represented in goodly numbers, as practically every tractor was fitted with plows of one make or another.

### There Were No Competitive Tests

Previous to each day's plowing, the machines would be put through a tuning up process, the engines warmed up and adjustments made so that when the machine was taken on the plowing field no possible hold-up could occur. This was very interesting to the farmer to a certain extent, but did it give him any definite results to work upon? Absolutely no! Every machine plowed and plowed well. Every machine performed its work in a satisfactory manner and whenever any difficulty was encountered, it was due to the condition of the ground and the clogging of the implement. On the first day of the plowing the ground was still too damp and many of the shares did not scour clean. However, this was not the fault of the tractor.

The point we wish to make is that the demonstrations did not leave any definite conclusions in the mind of the farmer or the trade as to which machine had the most stamina and the best material in it. The plowing was of a strictly non-competitive nature and therefore it was impossible to reach any decided opinions. The land was

the best obtainable for plowing purposes, and aside from this, the machines were all in the hands of trained factory mechanics and service men. It naturally follows that the showing made in each case was all to the credit of the machine. In other words, the machines were run under ideal conditions and it was simply a question of showing that the machine will plow.

The fact that these demonstrations have simmered down to non-competitive exhibits encourages the thought that this event will probably be the last, and that in the future a yearly show, such as the Kansas City show, will be the only affair of its kind at which tractors will be shown. Many of the exhibitors are sponsors for the statement that the cost of staging their exhibit was exorbitant and the results—as far as lining up dealers and selling direct is concerned—did not warrant the expenditure. Many exhibitors were there simply because their competitors were present.

### New Models Were Missing

With the exception of about three machines, there was nothing new at the Fremont demonstration that had not already been displayed at the Kansas City Tractor Show last winter. Many of the leading implement makers, as well as some of the established tractor concerns, have new designs in their shops which will not be uncovered for some time to come. One is waiting for the other to loosen up. This waiting attitude is due primarily to the over-sold condition of the tractor industry. With the demand exceeding the supply it is simply a question of production. The maker does not have to fight a selling proposition. The farmer needs the tractor and needs it badly, and is willing, at the present time, to buy most any machine that will give a fair amount of service. Undoubtedly, many of the new designs will be divulged at the next indoor tractor show.

As yet the tractor is still in its infancy as far as design is concerned. There are many designs on the market today which in five years from now will be absolutely tabooed. The process of evolution is bound to bring about the same conditions which have taken place in every other industry, of which, no doubt, the automobile industry is a fitting example. The tractor is essentially a farm power implement, and although automobile design can be applied for the power element of the tractor, the application of the tractor to the farm must be considered distinctly from the farm point of view. In other words, the tractor is an implement in the sense of the word designed to produce motive power, and it is up to the designer to build the tractor so that it will be fool-proof, so that the farmer can give his undivided attention to the implements.

This brings us to the point of price and construction. The farmer is willing to pay the price for the machine that will stand up and give service. He cares not whether the machine burns kerosene or gasoline and whether it has friction drive or chain drive,

but he does want something that will do the work effectually and consistently, and twenty-four hours a day, if necessary. The machine that is built of the best material obtainable; built so that wear and tear is reduced to a minimum; built so that all exposed working parts, drive gears, etc., are enclosed, and built so that the minimum of service is required, will win out and be in the field to stay.

Among the new machines that were shown are the new Bates Steel Mule, the new Holt model, the Cleveland tractor, the Big 4-Drive, of Big Rapids, Mich., and the Fageol. The Cleveland is of the track-laying type and attracted considerable attention on account of its compactness. The Fageol is a brand new idea in tractor design and is described in detail in the Chilton Tractor Department of this issue.

AN ENDLESS TRACK-LAYING TRACTOR demonstration was recently held before a board of military critics at the Rock Island, Ill., Arsenal. It is claimed that this tractor can perform every known trick from submarine exploits to climbing trees. The first demonstration was to operate the tractor into a deep clay pit dragging a 47 field piece and carriage with it. The machine waded into a deep swamp, where the engine went under water. It plowed its way out without losing any of its train, and then ascended a steep bank, after some railroad ties were dropped in the path to give it footing. A tree 6-in. in diameter was cut off without retarding the progress of the machine.

### New Government Publications

The Bureau of Mines of the Department of the Interior, has recently issued Technical Paper 140 on "The primary volatile products of the carbonization of coal," by C. B. Taylor and H. C. Porter, and Technical Paper 166 on "Motor gasoline; properties, laboratory tests and practical specifications," by E. W. Dean. Readers interested in either of these may secure them by addressing the Director of the Bureau of Mines, Washington, D. C., ordering by number and title.

ENGLAND WOULD ALLOW YOUNGER TRUCK DRIVERS—In view of the constantly increasing shortage of commercial car drivers in Great Britain, there is a movement on foot to bring pressure to bear on the Legislature, so that the minimum age at which a driving license is granted may be lowered. At present drivers of cars must be 17 and motorcycles 14.



## The Plow Boy and Plow Man Tractors

**U**NDER the above trade-names the Interstate Engine & Tractor Co., of Waterloo, Ia., is marketing its 10-20 and 13-30 tractors. The names are indicative of the relative capacities of the two models.

Both models are built along identical lines and are similar in appearance. The machines are of four-wheel type, driving from two rear wheels. A feature of this line is that the majority of the units used are of standard make and have been used in the make-up of well-known trucks for some years past. The use of standardized parts has greatly augmented the reduction of unnecessary weight. The 10-20 model is recommended for two 14-in. plows and the 13-30 model for three 14-in. plows.

The Kingston double bowl kerosene and gasoline carburetor is used. When operating on kerosene the fuel is heated sufficiently in the carburetor to insure its reaching the intake manifold in a high vaporized state. The carburetor is heated through a flexible tube taking the heat from the exhaust pipe. In addition to this the liquid kerosene is also heated by coiling the kerosene line around the exhaust pipe. The change from one fuel to the other can be made from the operator's seat almost instantly.

The power plant is comprised of a Buda 4-cylinder engine,  $3\frac{1}{2} \times 5\frac{1}{4}$  in. in the 10-20 and  $4\frac{1}{4} \times 5\frac{1}{2}$  in. in the 13-30. The

transmission is a Foote-Strite and gives two speeds forward and one reverse. By means of a specially arranged differential, working the same as a full floating axle in an automobile, all the power from the engine can be thrown into one driving wheel. The pulley drive and the differential mechanism is enclosed in a dustproof steel case. A steel expanding type clutch lined with "Raybestos" is used. The drive from the differential mechanism to the rear wheels is by means of roller pinions engaging 4-piece reversible steel sections securely fastened to the wheels. The reversible sections permit the gear teeth to be worn down equally on each side. The driving wheels are fitted with removable cast boxings, into which the spokes are screwed and

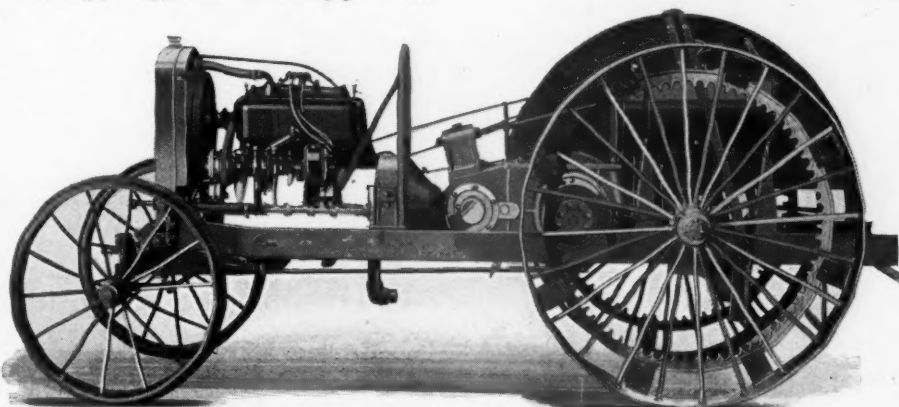
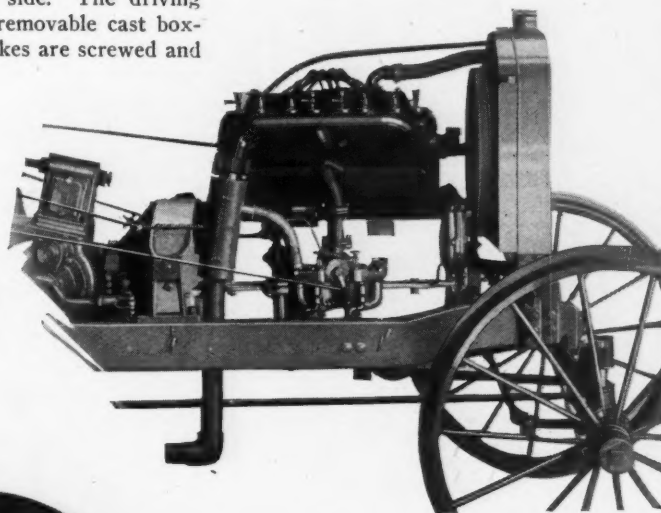
riveted. The spokes are fastened at the rim end in the same way.

The worm gear steering apparatus controls both front wheels. The speed and gas control is just ahead of the steering wheel. The gear shift lever is very conveniently located and an indicator shows in what gear the tractor is.

The following specifications are alike for both models: Diameter of drive shaft, 2 11-16 in.; revolutions of thresher pulley, 600 to 700; diameter of drive wheels, 5 ft.; width of drive wheels, 10 in.; diameter of front wheels, 3 ft.; width of front wheels, 5 in.; width over entire tractor, 5 ft.; length

### Close-up of the Power Plant

Attention is called to the triple cooling system. The hot-air connection to the kerosene carburetor is here plainly shown.



The Plow Man Tractor, Model 13-30, Built by the Interstate Engine and Tractor Company  
Hood and fenders are removed, showing Buda power plant, roller pinion drive, Dixie magneto, heavy channel frame which is three-point suspended

of entire tractor, 12 ft.; speed—low is 2 m.p.h.; high is  $3\frac{1}{4}$  to 5 m.p.h.; steel hood covers engine as in automobile practice, keeping out grime and dust; frame, heavy channel steel reinforced; seat, single type, solidly mounted, all operating within easy reach of the driver.

Specifications that are unlike in both models.

|                                         | 10-20 h.p.     | 13-30 h.p.     |
|-----------------------------------------|----------------|----------------|
| Traction horse power ....               | 10             | 13             |
| Brake horse power .....                 | 20             | 30             |
| Maximum horse power ...                 | 22             | 33             |
| Bore of cylinder, in. ....              | $3\frac{1}{2}$ | $4\frac{1}{4}$ |
| Connecting-rod stroke, in..             | $5\frac{1}{4}$ | $5\frac{1}{2}$ |
| Diam. thresher pulley, in..             | 12             | 12             |
| Face of thresher pulley, in.            | $6\frac{1}{2}$ | 8              |
| Normal engine speed, r.p.m. ....        | 950            | 850            |
| Diam. of transmission shaft, in. ....   | 2              | $2\frac{1}{8}$ |
| Total shipping weight, lb. approx. .... | 4,000          | 4,300          |

DAVIS SEWING MACHINE Co., Dayton, Ohio, has just closed a contract for agricultural tractors from the C. L. Best Gas Tractor Co., San Leandro, Cal., ranging from 20 to 40 h.p. The minimum amount stipulated in the contract is \$15,000,000, but this is expected to be greatly increased. The minimum number of tractors to be furnished annually by the Davis Co. is 1800.



Field Where the Plow Man and the Plow Boy Tractors Are Tested After Completion  
The tractors are run in circles without drivers. Tractors are running under test like this all day under the supervision of the testing department

Merit wins—that's why the CCJ is the leader

## The Holley Air-Washing Device

The Holley air washing device has been designed to prevent the dust suspended in the air from entering the engines of tractors and trucks working on dusty roads or in the fields. The need of such a device was impressed on those using tractors in the field or driving Government trucks on the Mexican border.

The Holley device consists essentially of a tank containing a quantity of water through which the air entering the engine cylinders is forced to pass. The water is carried by a tank J and is regulated by a float H. The air enters the device through a tube D, the lower end of which dips about  $\frac{1}{4}$  in. below the surface of the water. The float maintains this depth of immersion as the water is exhausted from the air velocity.

Above the float a series of baffles, F, G, is arranged to prevent large drops of water from passing out of the washer with the air. The top of the float is provided with a cap C that prevents any chunks of dirt from entering the tube, and also acts as an air shut-off when the water is almost exhausted. This automatically stops the engine and warns the driver of the need of refilling the washer. If immediate refilling is inconvenient or impossible the water filler I can be utilized as an emergency air entrance. The upper end of the tube is further protected by the housing L, all the air being forced to pass between the edge of this housing and the upper tank at a low velocity.

Air purifying apparatus have been of two main types—wet and dry. The dry type for use on trucks and tractors depends either on centrifugal force or large areas of fine mesh screen. The disadvantages of the

dry type were either incomplete cleansing action or a large space. The wet type is claimed to have the following advantages: 1, an effective removal of the dust or dirt entering with the air; 2, a minimum of power required for the operation of the device; 3, relatively small size and, 4, an increased motive power if an exhaust heated carburetor device is used.

A disadvantage of the wet type is the consumption of water in regions of low humidity and high temperature. It is said that the rapid consumption cannot be overcome by mechanical means as no water leaves the air cleansing device except as vapor in the air. It is, therefore, advantageous to maintain as low a temperature as possible, to conserve the water.

The Holley air washer is particularly suitable for use with the Holley vaporizer, or other exhaust heated carburetor, but it may be used with other carburetors without much change in adjustment. This air purifying device is a product of the Holley Bros. Co., Detroit, Mich.

## New York Buys Tractors and Loans Them to Farmers

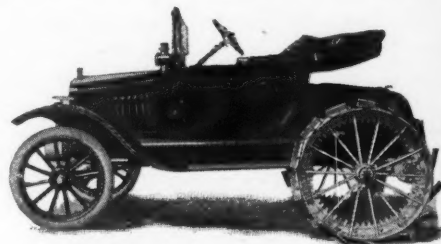
The New York State Food Supply Commission has purchased forty-one tractors which are being loaned to responsible organizations throughout the State. These tractors were purchased for the purpose of increasing crop production throughout the State; to prove the feasibility of the plan of aiding agriculture in this way; and to ascertain the adaptability of the tractors to the various sections of the State. The machines are loaned to any responsible organization of farmers provided they will agree to conditions imposed

by the Commission. A charge of \$150 is made for the 2-plow and \$175 for the 3-plow type covering its use until December 1st, of this year. This charge is supposed to cover the mechanical depreciation only. The farm organization, which secures these machines, must hire a competent operator, purchase the fuel and oil, and make all necessary repairs, and then charge the farmers, for whom they plow, so much an acre or an hour to cover the expense of the operation. The Commission has also purchased three ditching machines to be used throughout the State, which are to be placed in the hands of responsible organizations, as well as a potato spreading machine to be loaned to farmers now raising more potatoes than formerly, but not enough to warrant the purchase of such a machine.

## The Geneva Adapto-Tractor

When the Adapto-Tractor is attached to the Ford it converts the pleasure car into a tractor for farm work, or a power plant that will run cutters, presses, buzz-saws and other farm machinery.

It requires about 20 minutes to convert the Ford into a tractor. No holes are bored for the transformation. The radius rods on the Ford rear axle are replaced with two 3-in. channel side members. These are left



The Geneva Tractor Attachment Installed

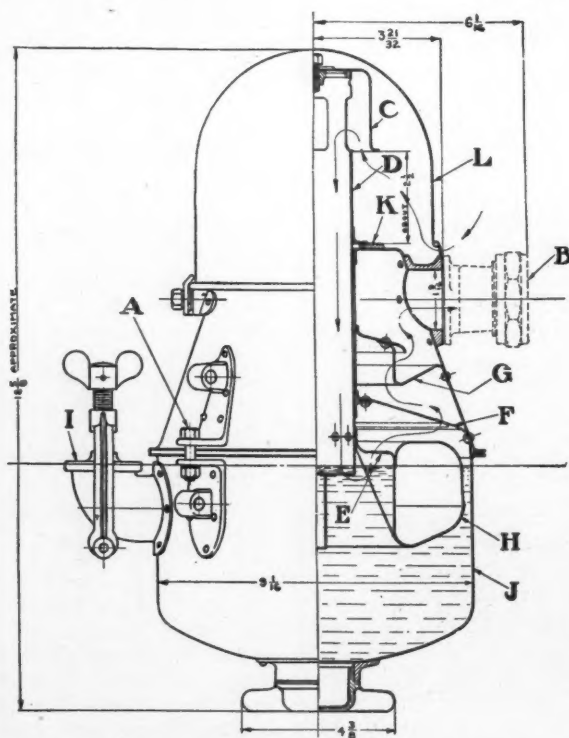
on the car permanently, strengthening the frame. The heavy tractor axle is then inserted, and two roller pinions are installed in place of the rear wheels.

A specially constructed fan and power plant prevent the engine from overheating. The materials used in the construction of the various parts are said to be durable and to make sturdy and stable members. When used as a power plant, the power is given direct through the crankshaft. A new main shaft is fastened to the Ford crankshaft by a special jaw coupling of hardened steel. On this main shaft is placed the belt pulley.

Simplicity of construction and ease of operation are features of this attachment. It is sold for \$148 by the Geneva Tractor Co., Geneva, Ohio.

OLDFIELD MOTORS CORP., 506 Sellwood Bldg., Duluth, Minn., has just opened a new plant at South Duluth for the manufacture of tractor motors, airplane motors and light 4-cycle, 4-cylinder, 6-hp. farm motors.

PEORIA EXPOSITION with the International Farm Congress and Soils Exposition for 1917 will be held from September 18th to 29th. Tractor demonstrations are to be held in connection with this show.



The Holley Air-Purifying Device for Tractors and Trucks

This device is designed to prevent the suspended dust in the air from entering the engines of tractors and trucks working in the field or on the road. The sectional view above shows the working parts and the path of the air through the device.



## The Day Tractor Unit for Converting Fords Cars

**T**O meet the demand for tractor attachments for Ford cars, the Day-Hamlin Mfg. Co., Jackson, Mich., has brought out the Day Tractor Unit. With a reasonably good Ford car and a Day Tractor Unit a farmer can do the plowing, hauling, harrowing, seeding, haying and much other work around the farm that ordinarily requires the use of three large horses. The Tractor Unit is complete in itself, being attached by clamps

Ford axle housing to rest upon, and to which it is clamped securely and strongly braced. Steel brackets fastened to the pipe frame support the hollow axle housing, which is located forward of the Ford axle. Into the axle housing are placed the tractor wheel axles, 1 7/8-in. high carbon steel. Over the housing and axle is placed a cast spreader which is machined to furnish a solid backing for the wheel when traveling over rough ground; it takes care of end thrusts.

Tractor wheels are 42 in. in diameter with 10-in. face. They have eighteen spokes and eighteen cross-cleats of angle steel, which can be removed for travel over roads. In each hub are two removable machined bushings which can be cheaply replaced when worn out.

Each tractor wheel carries a master gear, made in four sections, with chilled tooth surface and ribbed construction. It is operated by a roller pinion drive gear, made with a cast case, to which is attached the regular Ford brake drum; thus it is unnecessary to interfere with the brakes when attaching the Day unit. The roller pinion carries five heat-treated rollers and pinions.

To insure perfect cooling a special 10-gal. tank, a specially designed fan and a water-circulator are supplied with each unit. The addition of the unit does not alter the level of the Ford car and consequently does not affect the oiling system. To form a hitch of the correct height for farm tools having poles, a strong hitch is built into each Day Unit, so constructed that it takes the pull



**View of the Day Tractor Unit Attached**

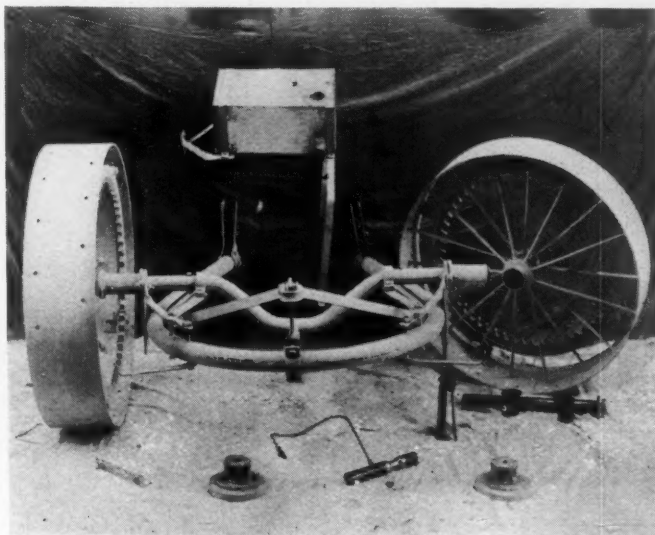
The main frame of this unit is made of a piece of large steel pipe. It is clamped to the Ford rear-axle housing.

to the Ford. It is not necessary to bore any holes in the car at all; all that has to be done is to remove the rear fenders and the foot boards.

The Unit's frame consists of one long piece of large diameter steel pipe, bent into shape to give a close bearing for the regular

### Parts of the Day Tractor Unit

The parts of this unit are shown here-with, one wheel is unattached. The tank shown is to give greater cooling-system capacity.



**A Strait Tractor Doing an Unusually Heavy Land-Clearing Job in Wisconsin**

This land is part of a seven hundred-acre tract of new land recently made available by a drainage system, although at the time the tractor did this work the land was very soft. The whole tract was broken up, as shown, without any attempt being made to first clear off the undergrowth. Willow brush 10 ft. high was turned under by the use of two 24-in. grub breakers. The Killen-Strait Manufacturing Company, of Appleton, Wis., make this tractor.

directly from the point where the axle is attached to the tractor unit frame.

The placing of the tractor axle forward of the regular Ford axle shortens the wheel-base and throws more weight on the tractor wheels, insuring good ground-gripping effect.

One of the noticeable features is the fact that tractor wheels can be removed and Ford wheels put back on the car in about five minutes, meanwhile allowing the unit to remain on the car. (Unit weighs only about 200 lb.) This means that a farmer who has an accident with his binder or plow or has to start for town in a hurry, can use his Ford just the same as though he had no tractor unit on it. After his run to town he can transform it back into a tractor in another five minutes. This one feature may mean saving many times the cost of the attachment to the owner.

Another feature that appeals to the implement dealer is the special arrangement that is made for trailing the tractor wheels to the farmer's field for a demonstration, with the unit in place under the Ford. In this way the dealer can make good speed to the field, change wheels in ten minutes and start his demonstration without delay.

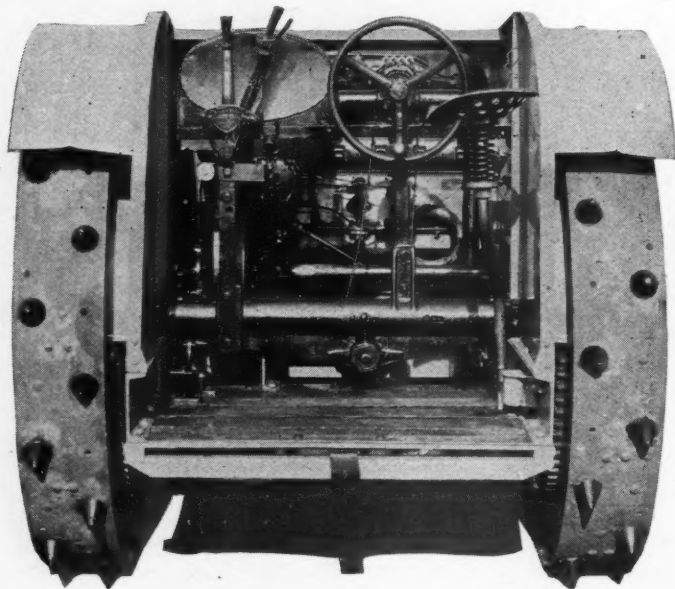
Make your product pay—advertise in the CCJ

The Day-Hamlin Mfg. Co. has a well-equipped shop, and is engaged in manufacturing Day Tractor Units in rapidly increasing quantities. Mr. A. Day, the designer, has been connected with the implement and plow business for the past fifteen years, and is familiar with the needs of the farmers; in fact he knows both the farmer's and the implement dealer's requirements.

This outfit has been given a thorough try-out in heavy farm work and has proved to have ample pulling and hauling power for three-horse farm work.

### The Parrett Farm Tractor

This tractor is made by the Parrett Tractor Co., of 343 South Dearborn Street, Chicago, Ill. It has a Buda engine, Model T-U,  $4\frac{1}{4}$ -in. bore and  $5\frac{1}{2}$ -in. stroke. A disc clutch is used. It has a spur gear transmission, 2 speeds forward and one reverse. It is equipped with a Kingston gasoline or kerosene carburetor, Dixie magneto ignition with impulse starter, fan, centrifugal pump and Perfex cellular radiator. Final drive is by spur gears. This tractor will satisfactorily handle three 14-in. plows. The kerosene vaporizer consists of a venturi tube heated by the ex-



**Rear View of the Parrett Tractor**

Shows control levers, steering wheel, and driver's spring seat. Notice the large drive wheels with staggered cones to provide traction.

haust gases from the engine. The carburetor air intake draws heated air from around the exhaust pipe. Provision is made to supply water to the mixture just above the vaporizer.

The weight of the machine, is 5200 lb.

The wheelbase is 92 in., the width 72 in. and the length 144 in. The rear wheels are 60 x 10 in. and are fitted with conical-shaped grips to give traction. The front wheels are 46 x 4 in. Low speed forward produces  $2\frac{3}{4}$  m.p.h.; high, 4 m.p.h., and reverse, 1.8 m.p.h.

The frame is of 7-in. channel, braced both lengthwise and crosswise. The machine is 66 in. high without the cab. The steel cab and canopy, which sell for \$20 additional, add 30 in. to the height. The gasoline tank holds 18 gal. and the radiator holds 5 gal. of water, it having a very large radiating surface. The price of the tractor is \$1075 f.o.b. the factory.

### Tractor Materials to be Given Preference in Shipment

According to H. L. Horning, of the Co-operative Committee on Automotive Transport of the Council of National Defense, the normal output of tractors for the year 1917 should be at least 50,000. Expectations are, however, that this may be 30 per cent. short. It seems probable that a Federal War Industries Board will be formed to deal with the problems confronting manufacturers of tractors and, without doubt, all materials needed in the production of farm tractors will be given priority in shipment over less needed materials.

TOM THUMB TRACTOR Co., 714 Merchants Bank Bldg., St. Paul, has reorganized under the name of the Federal Tractor Co.

H. B. KRONNING, former president of the Dorris Motor Car Co., St. Louis, is the organizer of a company to manufacture a single-wheel tractor. Factory facilities have been obtained and production will begin immediately. The device is to be attached to wagons and trucks and has a hauling capacity up to five tons.

### Tractors in Quite General Use in Hawaiian Islands

(From Government Commerce Report)

The use of tractors for plowing sugar plantation land has increased from 3 tractor engines in use in 1912 to 104 in 1917. Previously they were looked upon with distrust, but today are becoming almost indispensable in plantation field work.

Plowing was the first use to which these engines were put. For this purpose they replace mules to advantage under practically all conditions. For furrowing a small engine is used, or two plows may be attached to one engine. Cane has been cultivated with tractor engines successfully on one plantation. For this work 10 plows are pulled at one time, thus cultivating 5 rows per trip. A capacity of 11 acres per day has been recorded.

Hauling wagons of cane to the mill is a common use for tractors in the district of Kohala, Island of Hawaii. Loads of 50 tons per trip are not unusual. For hauling cane cars over portable tracks tractors have been used during the last two years. The engine straddles the track, which holds 15 to 20 carloads of cane at one time. The important factor in this method is the absolute control of the load on steep grades, going either up or down. Cane loaders are being fitted to tractor engines on several plantations.

### Efficiency Increased in Various Ways

Motor trucks and automobiles, which five years ago were considered a luxury on sugar plantations, are now everyday necessities. It has become more and more general to supply small cars to overseers, time-keepers and others. This not only facilitates their speed, but increases the efficiency of the men very materially.

The truck also is replacing the pack mule and wagon for transportation purposes, and is extremely valuable for carrying seed and fertilizers into the field and for hauling general freight and supplies. The use of motor trucks to take laborers to and from work is coming into general use. The amount of time and energy saved in this way more than compensates for added cost.

### France Needs 20,000 Tractors

Max Ringlemann, of the Agricultural Academy, and one of the leading agricultural experts of France, states that his country can absorb from 17,000 to 20,000 farm tractors in the next four or five years. About 1,000 tractors are now being used in France, of which 500 are owned by private individuals and the others by the state. It is necessary to produce or purchase abroad 20,000 tractors for the national prosperity of France, and as that country cannot produce them, America will have to provide them. Most of the farm work has fallen on the women and men not able to do military work. Before the war France produced 4,900,000 tons of wheat; in 1914 the production was 3,850,000 tons; in 1915, 3,050,000 tons and in 1916, 2,900,000 tons. This year over 200,000 acres are out of cultivation and the only remedy is to use tractors on a large scale.

### The LaCrosse Company Offers Increased Bonus

The La Crosse Tractor Co. has supplemented the recent offer to its factory employes of a bonus of 10 per cent. of their wages from July 1st to November 1st, provided they stay with the company throughout the season, with an added bonus amounting to, from 8 to 10 per cent. of their wages for the coming three months. This is contingent upon the amount of tractors produced up to November 1st next.

It will mean the speeding up of work at both the plants of the La Crosse concern in La Crosse and North La Crosse, and the increase of the working hours to 22 out of the 24.

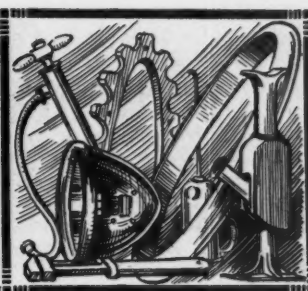
The La Crosse Tractor Co. was represented by the heads of all departments at the National demonstration at Fremont, Nebr., August 6 to 10th, and had six Model "B" tractors on the grounds.

For its readers—information; for its advertisers—results. That's the purpose of the CCJ





# TRUCK ACCESSORIES AND APPLIANCES



## The Holley Vaporizer

A new vaporizer for Ford cars is being introduced to the trade by the Holley Bros. Co., 140 Rowena Street, Detroit, Mich. This device is designed to burn kerosene, benzol, distillate, or any hydrocarbon with a final boiling point below 300 deg. Gasoline is used to start the engine and the heavier fuel to run it. From the illustration it will be seen that the gasoline and the other fuel enter separate chambers through float valve controls. A valve B controls the kind of fuel to be used. This fuel enters through the needle valve W and proceeds through a jet Q, at the top of which it is atomized by an air blast entering at Y and caused by the suction of the engine. Very little air is admitted here and a rich mixture results, which is drawn up through a vaporizing tube R, located in the exhaust manifold, where it absorbs all the heat possible from the exhaust. The now highly heated mixture passes into the mixing chamber M. Additional air is here introduced through an air valve U, to make the proper combustion mixture. The opening of this air valve is governed by the suction of the engine. A new cylinder is substituted to reduce the compression, enabling the slow burning kerosene fuel to work more satisfactorily.

When installing this vaporizer on a Ford Model "T" car the complete assembly is attached to the engine by standard gaskets, collars and clamps. The regular exhaust pipe is replaced by a longer one with special bends, which make possible its attachment to the connector Z. A special low-

compression cylinder head replaces the regular one. The standard tank is retained for the heavy fuel and an extra 2-gal. tank is installed under the rear seat. For commercial cars a small tank is bolted to the driver's seat heel panel so that the shut-off valve comes just above the floor boards. The two fuel tanks are then connected to their respective float chambers. Wires and rods controlling the valves, throttle and primer, are run through the dash to their respective positions on the vaporizer.

The price of this complete outfit is \$25 with an allowance of \$3 for the return of certain parts not in use over 30 days. Complete instructions for installing and operating are given with each apparatus.

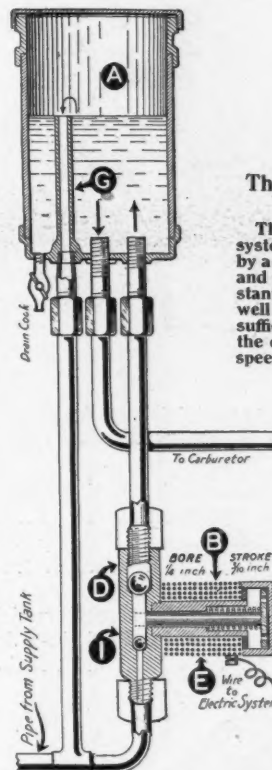
## New Gasoline Feed Device

A new device for feeding gasoline to the carburetor, which does not operate through a pressure or a vacuum system, is being introduced to the trade by the Motor Cooling Systems Co., 1317 Conway Building, Chicago, Ill. This device feeds in proportion to the motor's requirements and its operation depends on a magnetic pump. It maintains a constant feed level which eliminates the necessity of constantly adjusting the carburetor. The tank of the new Perfection system is sealed tight, and no foreign matter can get into it nor can the gasoline vapor escape.

From the accompanying illustration the operation of this feeding system can be easily understood. The gasoline is lifted to the auxiliary tank, A, by a small mag-

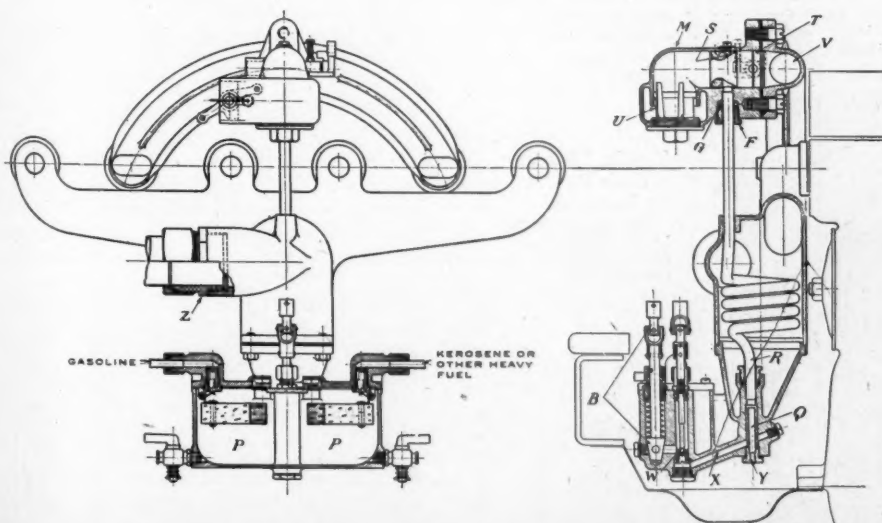
netic pump B. The cylinder of the pump is entirely sealed—there are no connections or packings through which the gasoline can leak. The piston head is of magnetic material, held in the outer position by a coil spring. Around the cylinder casing is a coil E, which magnetizes the core and attracts the piston head. This coil is connected in shunt to the primary circuit of the ignition system.

When the current flows through the coil the core is magnetized and the pump is



## The Perfection System

This gasoline feed system is operated by a magnetic pump, and it retains a constant feed level as well as supplying sufficient gasoline to the carburetor at all speeds.



Two Sectional Views of the Holley Vaporizer for Ford Cars

Sectional views of the Holley vaporizer for Ford cars, designed to burn kerosene, benzol, distillate or other hydrocarbons with a final boiling point not over 300 degrees

drawn forward, forcing the gasoline in the cylinder through the ball valve D, up into the tank. When the circuit is broken the coil spring forces the piston back, which action draws another charge of gasoline up through the inlet I, from the rear supply tank. This continuous action keeps the carburetor supplied with sufficient gasoline at all speeds. A stand pipe, G, which runs from the auxiliary tank to the pipe from the rear supply tank, carries all excess gasoline back into the main connection. Thus a constant level is maintained and the "head pressure" to the carburetor does not vary.

In offering the Perfection system the manufacturer will allow the full retail price of any gasoline system on any car, in exchange for the new device. The price of the new system is \$20.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

# New Magneto for Truck and Tractor Engines

Teagle Magneto is of Inductor Type, Using Straight-Bar Magnets  
Shows Many Radical Departures in Design

**M**ORE than ordinary interest is attached to the announcement of the Teagle Co., of Cleveland, Ohio, regarding the introduction of the new Teagle magneto, in view of the conditions prevailing today in the magneto industry. The new machine differs radically from preconceived ideas of construction. These departures, based upon extensive experimental research work, have

spark type. Any model can be fitted with an Impulse Starter.

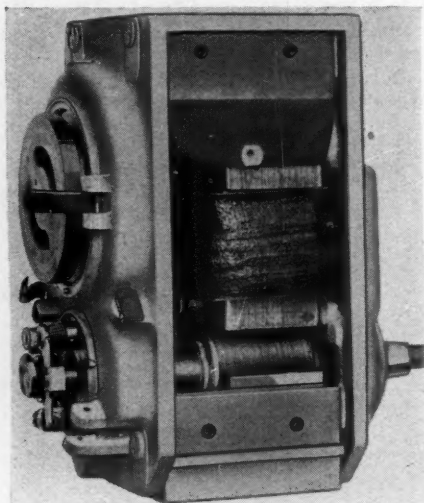
The Teagle magneto is of the inductor type. The only rotating parts are the distributor arm and gears and the shaft with the laminated distributor or rotor firmly attached.

The distributor gears of bronze and steel are of ample design and in connection with the rotating member of the current distributor are carried on steel or bronze bearings, the sleeve of which is cast integrally with the front die casting. The base and top are tied to the die cast end plates by specially designed screws. They are located in place by heavy dowel pins. This field structure is bored and ground as a unit, insuring accurate alignment of bearings and pole faces. The stationary coil, condenser and laminated pole piece are assembled as a

unit and mounted integrally with the top.

The permanent magnets are a unique feature. They are of a straight bar type, carefully ground and securely clamped to the top and bottom. In the Teagle magneto there are no moving or movable wires, slip rings or brushes, except the collecting brushes in the distributor.

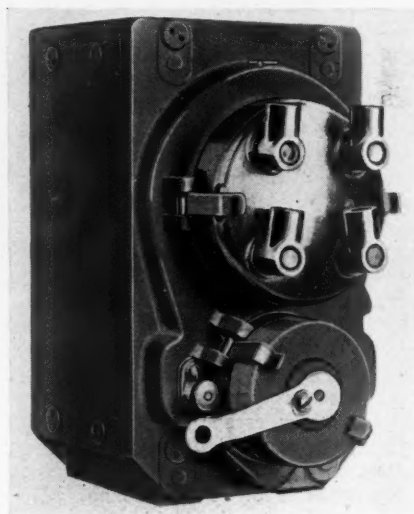
The distributor and breaker are readily accessible and are the only two parts of the



Teagle Magneto With Magnets Removed  
Showing Stationary Winding

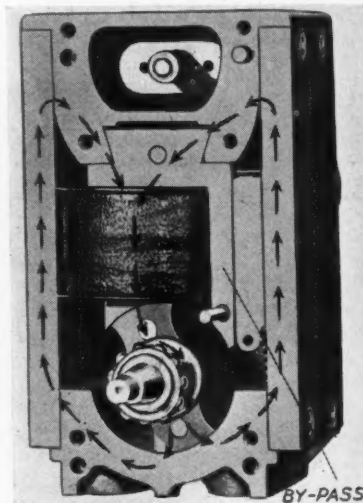
resulted in extreme simplicity of construction and ignition dependability. The Teagle design insures sturdiness, reliability and adaptability to every type of truck or tractor engine.

Up to the present time several models have been developed for four and six-cylinder engines, of both the fixed and variable



New Teagle Inductor-Type Magneto

Built for four and six-cylinder tractor and truck engines, with or without fixed spark arrangement..



Teagle Magneto With Magnets Removed

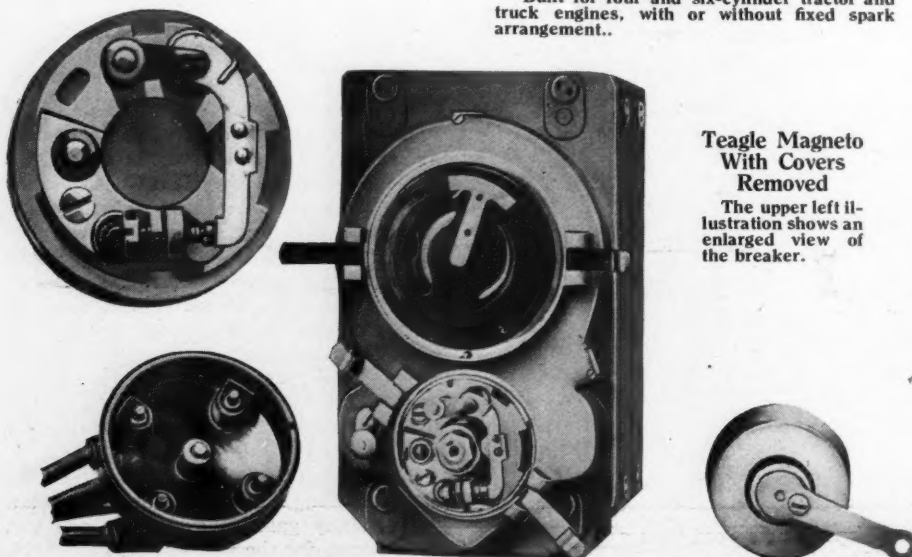
When the flux distributor is opposite the by-pass the flux passes through it instead of through the coil.

magneto in which cleaning or adjustment may be necessary.

All of the simple electrical connections are thoroughly protected, not only by liberal insulation, but also from excess voltage strains by an enclosed safety gap which, while visible and readily accessible, is absolutely foolproof.

The illustration showing end plate removed gives a clear idea of the magnetic circuit of the Teagle magneto. The flux starts from the magnets, flows up on each side through the top casting down through the laminated pole piece, through the coil, and with the flux distributor in a vertical position, through the flux distributor to the base, and from the base to the lower ends of the magnets. Then, as the flux distributor revolves, it leaves the section of the laminated upper pole piece extending through the coil, and comes into proximity with the by-pass. The flux now flows through the by-pass instead of through the coil, but in other respects its path is the same as before.

Thus the flux linking is through the coil when the flux distributor is in the vertical position and linking outside of the coil when the flux distributor has revolved from its vertical position toward the by-pass. Since the flux distributor has two faces,



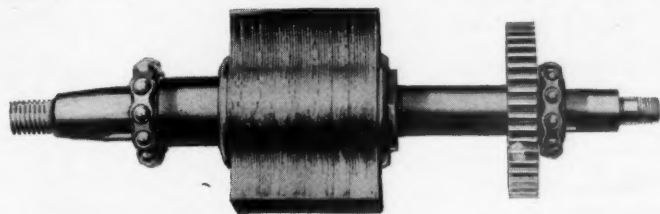
Teagle Magneto  
With Covers  
Removed

The upper left illustration shows an enlarged view of the breaker.



this cycle of operation is repeated twice per revolution of the magneto. The flux never reverses through the coil.

The Teagle magneto gives two sparks per revolution. The spark characteristics are such as to produce a sudden rise of current, due to high initial voltage generated, sustaining that current at a higher value for a sufficient length of time to insure the com-



**Rotating Armature Shaft**

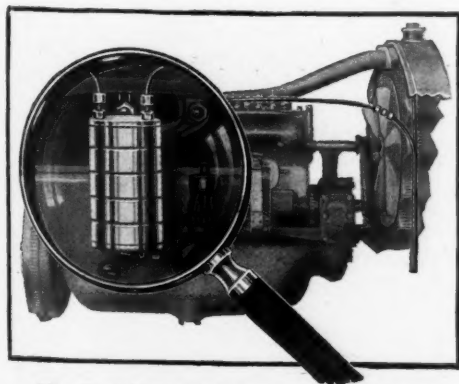
The laminated armature carries no winding.

plete combustion of all gases in the cylinder. The spark is always in the same direction through the spark plugs of each cylinder, that is to say, the same section of the spark plug is always positive. Both the high and low tension currents are magnetizing in their effect and no demagnetizing action can occur to weaken the magnets.

### The Strasburg Economizer

The Strasburg gasoline economizer introduces a warm, moist vapor into the mixture and thus facilitates combustion by breaking up the molecules of gas more thoroughly. The accumulation of carbon is said to be greatly lessened by this device and the power of the motor increased.

The water from the radiator is used in forming the water vapor. The economizer consists of: a push valve regulated from the dash, a vapor chamber where the water is separated from the vapor, an automatic drain, 12-gage wire encircling the vapor chamber and used to hold that chamber in place, a coupling connecting a 2-in. piece of pipe soldered on the overflow to the pipe leading to the intake chamber, an intake from the overflow pipe, an inlet to the intake manifold, and 1/4-in. brass tubing for



**The Strasburg Fuel-Conditioning Device**

making connections. The installation is simple and can be made on any water-cooled engine. The J. L. Strasburg Mfg. Co., Albert Lea, Minn., makes this device.

THE VIM MOTOR TRUCK CO., of Philadelphia, is organizing a league of patriotism interesting automobile dealers throughout the country in a national movement for the promotion of better business at this time.

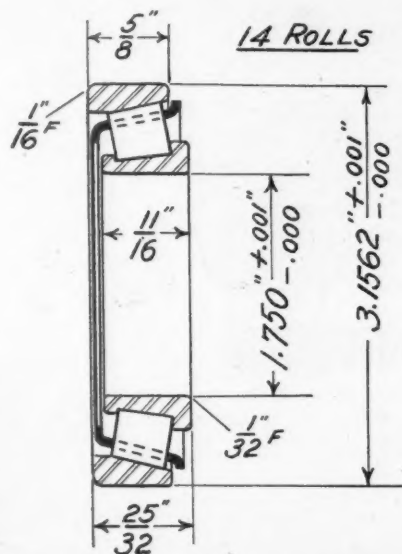
The Standard Roller Bearing Co., Philadelphia, Pa., has just commenced to manufacture taper roller bearings in accordance with a new scheme of construction representing a radical departure as regards shape of rollers and cone from the design of any

bearing which has so far appeared on the market.

The parts are simpler to manufacture, so that they can be gaged very accurately and all the component parts of the bearing are made more nearly interchangeable than it has before been considered possible to make.

In a test made of this bearing, size No. 288-T, under 1000 lb. radial load and 500 lb. simultaneous end thrust, speed 1000 r.p.m., the new bearings averaged 10,000 miles, running before any part of the bearing surfaces showed even the slightest roughness.

In this bearing the cone and the cage elements of the rollers are a self-contained



**Sectional Drawing of the S.R.B. Improved Type Taper Roller Bearing**

unit. The rollers and cage are, however, very easily separable from the cone, as occasion may arise for inspecting and cleaning the bearing surface of the cone.

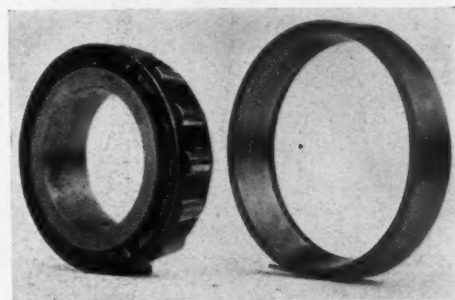
The principal features of the new design will be evident by referring to the accompanying sectional drawing. The conical rollers are ground off at the large diameter end, straight and square with the axle. The straight ends of the rollers abutt against a shoulder on the cone representing a concave conical surface.

The ends of the rollers bear against the shoulder on the cone at two points of contact, which has a stabilizing or righting influence upon the rollers, preventing them from skewing out of the correct direction

## New Roller Bearing Developed

that is necessary to realize mathematically pure rolling motion over the main body of the rollers. It is by virtue of this feature that the high efficiency claimed for this bearing is realized.

The individual rollers and the entire cage element are confined to their correct relative axial position with respect to the cone by means of a flange made integral with the cone and terminating its thin end. This flange serves a double purpose. It eliminates the necessity of adjusting the rollers with respect to the cone so that in mounting



**S.R.B. Improved Taper Roller Bearing**

the bearing it is only necessary to adjust for the relative position of the outer race and the combined cone and cage element. This feature makes the bearing more nearly fool-proof against misadjustment when initially installed.

The circular flange at the thin edge of the cone also adds to the mechanical strength of the part. The flanges or shoulders at each end of the cone project high enough to prevent displacement of the cage element of rollers from its position on the cone even with the most careless handling.

REPUBLIC RUBBER Co., and Knight Tire & Rubber Co., Canton, Ohio, are to be merged into a new corporation with a capital stock of \$20,000,000. H. J. Woodward will be general sales manager of the two concerns. An option on the plant of the Knight Co. has been taken by the Republic Rubber Co.

### James Combination Grease and Oil Guns

The cylinder of this gun is made of heavy seamless brass tubing, and fitted with a bronze cast cap at both ends. The Spindle has a four-start thread on it to insure a quick pressure on the grease when the gun is used as a grease cup, or a small quantity can be forced out by turning the spindle slowly. When used as an oil gun, the knurled bonnet is loosened. Two spouts are furnished with this gun. A 6 oz., 1 1/2 x 7 in. size sells for \$2.40; an 8 oz., 1 3/4 x 6 1/2 in. size sells for \$2.80; and a 10 oz., 1 3/4 x 10 in. size sells for \$3. The Generator Valve Company, Incorporated, 47 Dinsmore Place, Brooklyn, N. Y., makes these guns.



## Phenix Truck Maker

Men, who have been active in the improvement and development of truck attachments, have formed the Phenix Truck Makers, Inc., 2337-2339 South Michigan Boulevard, Chicago, and are manufacturing the Phenix truck maker, an attachment of 3000 lb. capacity.

This addition to the ranks of the industry has as president, M. R. D. Owings, who, up to 1913, was one of the chief executives of the International Harvester Co., and after that operating vice president of the



**The Phenix Truck Maker**  
The dark shaded rear system indicates the attachment

Advance-Rumley Co., La Porte, Ind.; H. O. King, chief engineer and treasurer, held a similar position with the Maxfer Truck & Tractor Co. until recently.

The specifications of the attachment are:

Carrying Capacity—3000 lb.

Frame Construction—4-in. steel channel, heavily reinforced with four cross members.

Rear Axle— $1\frac{3}{4}$  in. x  $2\frac{1}{4}$  in. section,  $2\frac{1}{2}$  in. spindles, heat treated.

Bearings—Bock roller, rated to carry 10,000 lb.

Radius Rods—Heavy steel of special design with the Phenix chain adjustment.

Springs— $2\frac{1}{2}$  in. wide, 44 in. long.

Lubrication—All wearing parts fitted with grease or oil cups.

Wheels—32 x  $3\frac{1}{2}$  in., twelve 2-in. square spokes.

Tires—32 x  $3\frac{1}{2}$  in. standard pressed-on type.

Drive—Baldwin chains on special analysis steel sprockets.

Gear ratio—Standard, 7 : 1.

Brakes—3 x 12 in. internal expanding, positive in action.

Wheelbase—125 in.

Tread—Standard, 56 in.

Loading Space—9 to 11 ft. back of driver's seat, according to body.

Weight—Attachment only 1100 lb.

Price—\$350 f.o.b. Chicago.

A special feature is the extra bearing that saves the rear axle. This is a ball bearing sprocket that takes the strain off the rear shaft, carrying the load and thus avoiding

rear axle trouble. The extra bearing carries the driving strain to the stationary axle housing rather than to the axle itself, preventing breakage. The Ford axle is not marred in any manner. There is positive and ample adjustment of chains.

The springs are extra heavy to carry a full capacity load without sagging.

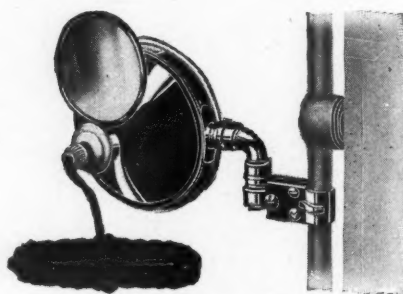
Going still further the claim is advanced that 90 per cent. of the load is carried by the Phenix truck maker, hence there is no danger of overloading the car that becomes its power plant or putting undue strain on the engine.

## New Howe Spotlight With Rear-View Mirror

The Howe Mfg. Co., 1732 South Michigan Avenue, Chicago, Ill., is offering a new spotlight with a spring controlled bracket, called the "Howe Junior, No. 15." It has a 4-in. rear view mirror and sells for \$4.75. It can be had without the mirror for \$4.

The bracket of this new lamp has a spring controlled arrangement that makes the operation of the lamp very easy. The rays of light can be directed to any desired spot and the lamp remain stationary where it is placed because the springs exert a constant pressure on the turning joints.

The Howe spotlight is provided with two-piece detachable clamps for attaching the lamp with its bracket to any round, square or oval windshield post. Jars and vibrations are said not to affect the position of the lamp.



**Howe Junior No. 15 Spotlight**  
A rear view of the new Howe Junior No. 15 Spotlight, showing the bracket attachment and the position of the rear-view mirror.

This light is suited for commercial cars as well as pleasure cars. Trucks doing hauling by night find that a searchlight becomes a valuable asset. Every truck that the Government is sending to France is equipped with a spotlight. Because the Howe spotlight is easily adjusted to any angle and can be conveniently used as a trouble lamp, it is suitable for commercial car use.

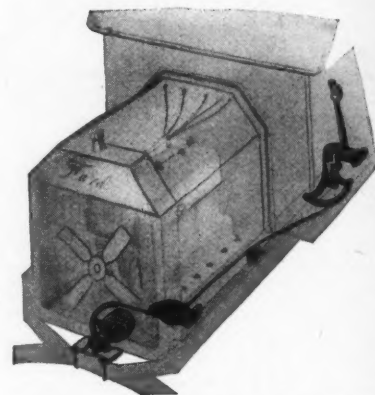
METZ Co., of Waltham, Mass., has inaugurated a new department for the manufacture of truck units for converting new or used cars into one-ton trucks. The company is also to manufacture tractors, designed by Charles H. Metz.

UNITED LINE SERVICE CORP., distributor of the United States trucks and tractors, has moved to its new salesrooms and service station at 11th Ave. & 50th St., New York City.

## Little Giant Starter for Fords

A new starter for Ford cars is being introduced by the Little Giant Starter Co., Canton, O. This starter is simple in construction and operation, and is entirely mechanical, making use of a system of leverage so distributed as to enable anyone to operate it with ease.

It is operated from the driver's seat by a medium sized foot pedal placed to the left



**A Phantom View of the Little Giant Starter Attached**

of the other pedals in the car. This pedal remains locked in the dash, out of the way, when not in use. The remainder of the mechanism is under the hood—out of sight.

This starting device permits the disengagement of all working parts when the motor is in motion preventing noise and wear. It does not detract from the power of the motor. The appliance is machined and finished. It has a specially constructed steel link chain, which, it is claimed, will not stretch or break. The pedal is black enameled and the crank rod and bushing are nickel plated and polished.

If the motor should back fire the starter releases automatically, eliminating the danger of damage to the car or starter. The outfit includes a hand crank to be used in emergencies, and a simple "primer" to facilitate the starting of a balky motor under unfavorable conditions.

The Little Giant starter fits any Ford car and comes boxed complete, with detailed instructions for its installation. It can be attached to the motor and car frame in a short time by any mechanic, as no machine work or hole boring or special tools are required. The price is \$20.

A. J. DITLAFF Co., Detroit, has opened a new clutch department in which to manufacture a disc type of clutch of its own design for both pleasure and commercial cars.

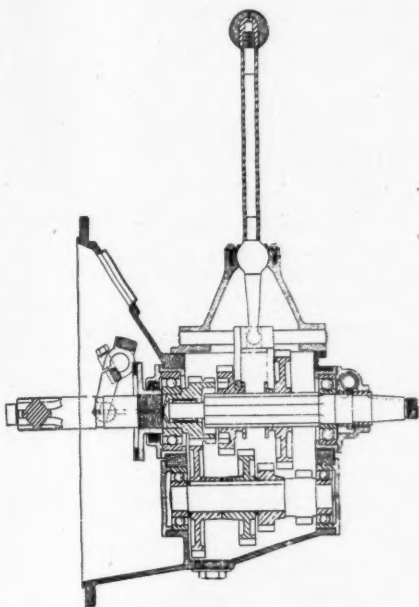
ASHLAND PRODUCTS Co., Ashland, Ohio, was recently incorporated for \$100,000 for the purpose of manufacturing an up-to-date line of automobile and truck jacks, as well as tire savers. The officers are: J. W. Brindle, president; J. W. Stillwagon, vice-president; C. L. Smith, treasurer; Jas. Hess, secretary and office manager, and L. R. Williams, factory superintendent.



### Four-Speed Truck Gearset

A truck transmission, Model 5A, with four speeds forward and reverse, and pleasure car transmission, Model 3-17, with three speeds forward and reverse, are being manufactured by the American Die & Tool Co., Reading, Pa.

The capacity of the commercial car transmission ranges up to three tons. It can be had for either three or four-point suspension for a main frame or a sub-frame mounting. The design can be arranged for



Sectional View of Model 3-17

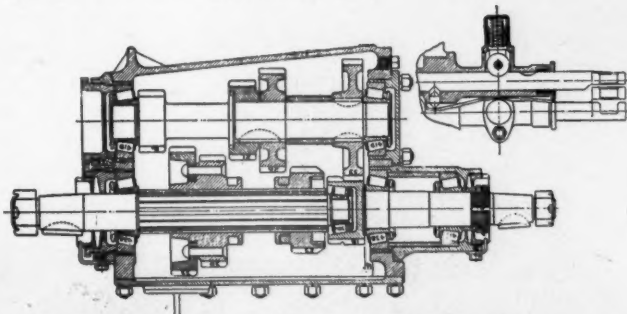
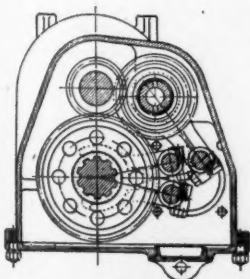
A transmission with three speeds forward and reverse, for light delivery cars, and for pleasure cars of from 25 to 35 h.p.

power take-off and also for a speedometer connection on the rear of the driving shaft when desired.

The gears are drop-forged of  $3\frac{1}{2}$  per cent. nickel steel. They have a 6-8-in. pitch, a  $1\frac{1}{4}$ -in. face and a pressure angle of 20 deg. The shafts are nickel-steel except the sliding gear shaft, which is a Carpenter & Samson. Timken bearings are used and the shaft ends are either square or tapered to the S. A. E. standards. The housing is made of either aluminum or cast iron. The shift forks are drop-forged, and in first speed a ratio of 4 to 1 is obtained through the gears.

### The Light Truck Transmission

This transmission with three forward speeds and reverse has a capacity of from



Model 5A Truck Transmission of the American Die & Tool Company

This type has a capacity of three tons and is suitable for heavier trucks and delivery cars. It has four speeds forward and reverse. The illustration shows a side and an end section

1 to  $1\frac{1}{2}$  tons or from 25 to 35 S. A. E. h.p. The dimensions of the bell housing are to be specified and the shaft end is made to fit a Borg & Beck model D. A. clutch. The control levers are S. A. E. standard and the pedal set is made to specifications. The unit is designed for a speedometer connection and also for a tire pump on the reverse idler. In first speed the gear ratio is 3.33 to 1 and in reverse is 4.35 to 1.

### "Rust Kill" Compound

A compound for facilitating the moving of rusty nuts and pins as encountered in general garage work and for use wherever the removal of rust is desirable, has been placed on the market by the Distributors Motor Supply Co., of Cleveland, Ohio.

This compound is said to penetrate between surfaces in contact and removes the rust without injuring the material itself. It is also claimed especially useful for removing tires frozen to the rim. Rust-Kill may be had from the Motor Supply Co., Cleveland, Ohio, at 65 cents per bottle.



### A New Hy-Watt Battery

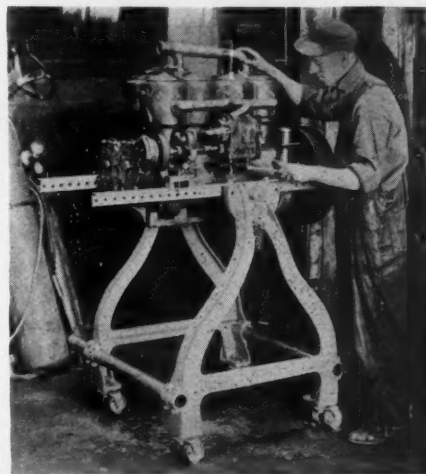
Hy-Watt battery No. 12 is used as a head-light steadier. It keeps the headlights at full brilliancy when the magneto slows down. The battery may be equipped with a switch to light the side lights when the car is standing, or connected to light the tail light at all times. This No. 12 Hy-Watt may also be used for starting and for auxiliary ignition.

Only two connecting points are used, which simplifies connection. The battery is said to be water and weather-proof. The price of this Hy-Watt is \$6, with 75 cents additional for a switch to use the side or tail lights. It is being offered by the Hy-Watt Battery Company, Cleveland, Ohio.

### The Continental Engine Stand

A new engine stand that handles all types of engines—four-, six-, eight- or twelve-cylinder, Ford, three-point suspension, truck or tractor type—is being manufactured by the Continental Auto Parts Co., Knightstown, Ind. It is portable through double-wheel casters and gives access to every part of the engine. The stand itself is 39 in. high and occupies a floor space of 29 x 36 in.

After the engine is fastened to the stand by bolts and clamps it can be turned to any angle and locked with a small steel pin.

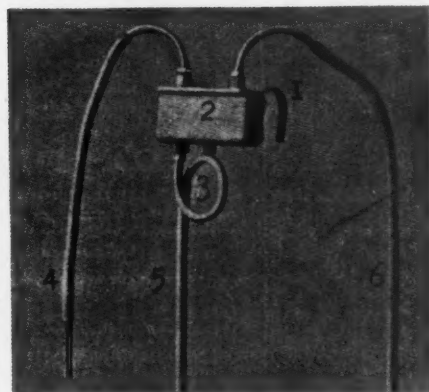


### Continental Adjustable Engine Stand

This stand takes all types of engines and is quickly adjustable to any width from 0 to 30 in.

This pin is attached to the stand by a chain and cannot be lost. Because of its various adaptability features this stand is well suited for progressive assembly where portability and ease of operation are desired.

All Continental stands are shipped knocked down to obtain low freight rates. The shipping weight is 265 lb. Further information will be furnished upon request by the maker.



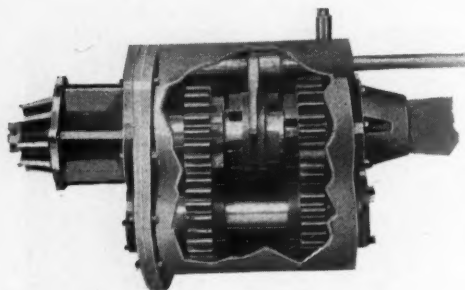
### The Outhouse Vaporizer

This vaporizer, built for any car, is said to remove carbon and prevent any more from forming. It puts the damp atmosphere of cloudy, foggy weather into the engine just as it needs it. The maker guarantees more mileage, more power, less carbon and a smooth-running engine. The device is easy to install, and takes but fifteen minutes for placing. It operates automatically. The different parts can be seen from the illustration: 1. Exhaust manifold connection; 2. Water vaporizer; 3. Overflow trap; 4. Hot-air connection; 5. Overflow pipe; 6. Radiator connection. The Elyea-Austell Company, Atlanta, Ga., distributes this device exclusively wholesale. In single lots the price is \$4.50; in lots of ten, \$4.00 each.

Everybody who is anybody in the truck industry reads the CCJ

## A New Transmission for Fords

Crump's auxiliary transmission equips the Ford car with a four-speed forward attachment which, incidentally, prevents the car from starting forward when cranked. A shifting lever enables the driver to quickly tell in what position the gears are. The low speed is lower than the Ford low and is used to advantage in starting a load up a hill or when stuck in mud, sand, etc. The intermediate speed is third and saves racing the motor, vibration and overheating on



**Crump's Auxiliary Transmission**  
A partly cut-away section showing the internal arrangement of the gears

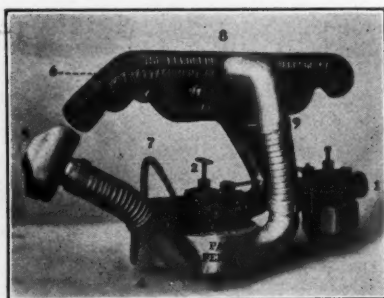
hills and in crowded places where travel is slow. It also obviates the necessity of holding the foot on the low pedal when traveling slowly.

The gears of this transmission are always in mesh and, it is claimed, cannot grate, strip or slide. Ball bearings are used to increase the endurance and promote easy running at high speeds. The gears are of steel, hardened and ground. All the shafts are of vanadium or nickel steel.

The attachment is made in over-drive and under-drive and the price for each make is \$75. They are furnished with drive shaft and housing complete, ready to install. The L. & B. Truck Mfg. Co., 1416 S. Los Angeles Street, Los Angeles, Cal., manufactures and distributes this transmission outfit.

## Kerosene Attachment

The Kerosene Attachment Co., Jackson, Ga., is marketing a device which enables the autoist to run his car on kerosene. This



**A View of the Kerosene Attachment**

device consists of: 1, a gasoline cranking carburetor; 2, a kerosene carburetor; 3, a heater; 4, an automatic water vaporizer; 5, an exhaust connection; 6, a heat regulator; 7, a flexible tube which connects the radia-

tor overflow and the water vaporizer; 8, a twin manifold (intake and exhaust); 9, exhaust and carburetor heater connections.

This attachment is said to give more mileage, a cooler engine and less carbon deposit. It burns a gas evolved from the kerosene by heat from the exhaust.

Instructions for attaching are furnished and any mechanic can install the attachment in a short time. It is simple to operate and can be handled by anyone familiar with running a Ford on gasoline.

## New "Red Devil" Pliers

A handy vest pocket plier,  $5\frac{1}{2}$  in. long, has just been added to the line of "Red Devil" pliers. It is a well finished, nickel-plated tool, and special features such as knurled handles and specially designed jaws make it serviceable for doing light work around automobile engines. The gripping jaw is adapted for handling pipes,



**New "Red Devil" No. 24 Pliers**

wires, square and hexagon nuts and irregular shaped objects. The jaw is provided with a slip-joint, making it adjustable for gripping larger shaped objects. This tool is made by Smith & Hemenway Co., 130 Coit Street, Irvington, N. J.

## The Royal Truck Unit

The Royal unit being offered by the Royal Motors Co., 601 Congress Bldg., Detroit, Mich., is built of double, cross-member construction and has a three-point suspension between the front of the engine and the rear end of the frame. This, together with the triple spring construction, is said to overcome vibration and give the truck easy riding qualities.

The Royal frame is made of  $4 \times 2\frac{1}{2} \times 3$ -16-in. reinforced, pressed steel. It overlaps and extends the Ford frame, which forms a sub-frame for the attachment. There are two side springs,  $2\frac{1}{2} \times 48$  in. with 12 leaves, and one rear cross-spring,  $2\frac{1}{2} \times 36$  in. with 5 leaves. The rear cross-spring takes up the vibration when the truck is empty or carrying a load up to 500 lb. The load is then transferred to the heavy side springs. The axle is 2 in. diameter of solid carbon steel, tested to 2½ tons and is supplied with heavy duty roller

bearings and adjustable radius rods. The sprockets are of special steel, cast integral. Two Culver-Taylor,  $1 \times \frac{3}{8} \times \frac{3}{8}$ -in. chains transmit the drive. The rear wheels have twelve  $1\frac{3}{4}$ -in. spokes and solid 32x4-in. Firestone tires. The wheelbase is 135 in. and the tread is 56 in. The service brake is attached to the rear axle brake drum and an emergency brake is fitted on the jackshaft.

The average speed of the Royal truck is 18 m.p.h., the net weight of the unit is 875 lb., and its capacity is  $1\frac{1}{2}$  tons. Any style body is furnished. Attaching the Royal unit does not mutilate the Ford in any way. The rear axle is not cut and the unit may be removed and the Ford rear wheels, springs and body replaced when desired. The complete unit, ready to attach, but exclusive of the body, is sold for \$350 f.o.b. Detroit.

## Arrow-Grip Non-Skid Chain

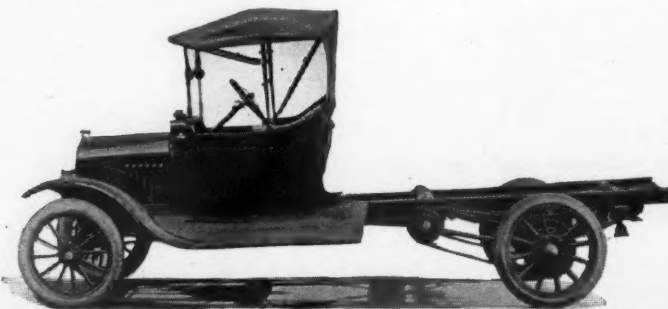
The Arrow-Grip is a device to prevent the skidding of motor trucks of all sizes and capacities equipped with either single or dual type solid tires. The device is easily attached or detached, the units or clamps being fastened to the alternate spokes of the wheels. The cross chain is locked in by a locking device in unit with the clamp.

The unit proper is a malleable iron casting lined with a pliable material to prevent marring the spokes. This part remains at-



**The Arrow-Grip Non-Skid Attachment**

tached to the spoke and to it the cross chain is fastened when desired. The clamps are made square, round, oblong, or oval to fit any size or shape spoke. Enough chain is furnished with each clamp to fit any new tire. The tested breaking strength of the chain is 8000 lb. The Arrow-Grip Mfg. Co., Glen Falls, N. Y., offers this attachment complete at from \$1.75 to \$2.85, according to the size and shape of the clamp.



**The Royal Truck Unit for the Ford Car**

The unit can be attached and removed without mutilating the Ford. It has a capacity of one and a half tons.

Plenty of the right kind of circulation means quantity results to advertisers in the CCJ



## New Ford Windshields

Two new windshields for Ford cars have been announced by the Motor Products Corp., Detroit, Mich. One of these is especially designed for Ford commercial cars. Its big feature is the elimination of stay



The Commercial Car Shield

rods, which usually form a part of the Ford commercial shield equipment. The new Motor Products shield bolts directly to a straight dash. Stay rods and clips are not needed, as the brackets hold the shield rigidly in place. It is rain vision and ventilating and thus insures safety and comfort to the driver of the commercial car on which it is installed.

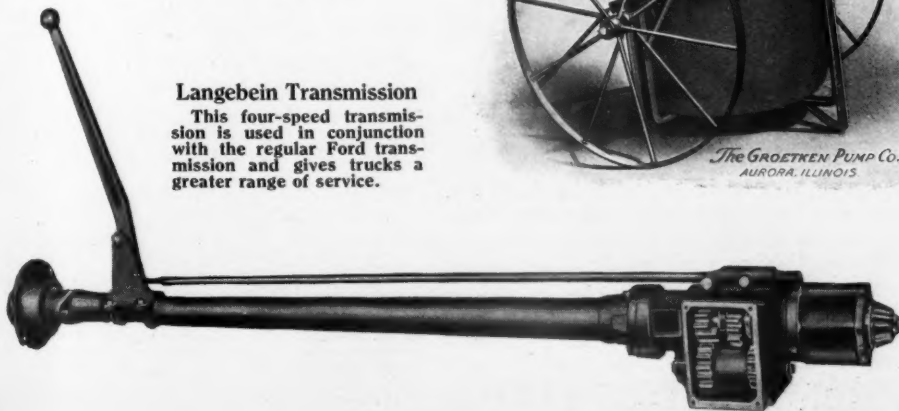
## The Langebein Four-Speed Transmission for Fords

This transmission works as an auxiliary with the one already on the Ford car. The foot pedals are used in the ordinary way. Two additional speed ratios are added to the regular Ford speeds, i. e.,  $5\frac{1}{2}$  to 1 in low high and 18 2-10 to 1 in low-low or transmission gears. A neutral position is also obtained in the transmission which eliminates any drag in the rear end of the clutch.

The Langebein transmission is strongly built of good material and it is said to be practically indestructible. The case is malleable iron with a plate at one side which can be easily removed for inspection or cleaning, and which will permit removing roller bearings, the same as are used on the pinion shaft of the Ford cars, are used for the main shaft of the transmission.

### Langebein Transmission

This four-speed transmission is used in conjunction with the regular Ford transmission and gives trucks a greater range of service.



The lower shaft is hardened and ground and is held stationary in the case. The gears on it are bronze bushed.

By removing two screws the shaft can be removed and the gears taken out, or re-bushed if necessary, without disturbing any other part of the car or transmission. Most of the parts of this transmission are of standard size and can be obtained at the Ford agencies. The gears are manganese steel, stub tooth, 6-8-in. pitch and  $\frac{3}{4}$ -in. face.

The application of this transmission affords a broader range of capacity and performance, especially desirable in trucks. It is compact and does not decrease the road clearance. The Pacific Auto Sales Co., 1111-13 W. Pico Street, Los Angeles, Cal., manufactures this appliance and sells it for \$48.

## Electric Welding Compound

The Mechanics Welding Co., Ortonville, Minn., is offering a welding compound for welding tool and spring steel and for intricate work. This compound is always used between the parts, pieces, splices or scarfs that are to be welded. When the material to be welded is hot a little of the Welding compound is placed in the splice. When this cools and hardens the material is said to be solidly welded. Electric Welding is sold in 5-lb. bags at 50 cents per lb.

CONESTOGA MOTOR TRUCK CO., Lancaster, Pa., contemplates the manufacture of approximately 10,000 trucks of the  $\frac{1}{2}$ -ton class in the near future.

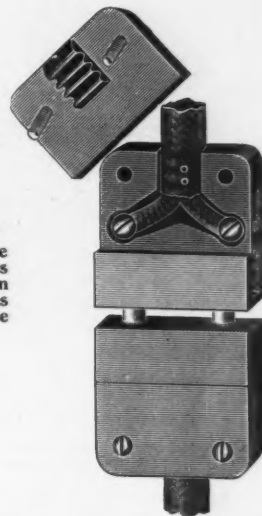


The GROETKEN PUMP CO.  
AURORA, ILLINOIS

The New Groetken  
Portable Barrel Cart

## Kliegle Auto Connector

A device that is suitable for making rapid and frequent electrical connection when charging storage batteries in garages is being marketed by Kliegle Bros., 240 W. 50th Street, New York City. This connector is made of hard fibre, having brass split pins that fit tightly and make good contacts. All the live parts are enclosed. A cable clamp, which is provided with teeth for



The Kliegle  
Auto Connector

Showing the cable clamp which prevents mechanical strain upon the connections by holding the cable firmly.

biting into the cable, holding it firmly, is affixed to the connector at each end. These prevent mechanical strain upon the connections. The Kliegle connector has an amperage of 15, a voltage of 125 and is sold for \$1.37.

## Groetken Portable Barrel Cart

The Groetken Pump Co., Aurora, Ill., is making a portable barrel carrier that enables the garageman to dispense his gasoline without the aid of an underground system. When the gasoline is ordered in barrel lots this cart makes an economical carrier.

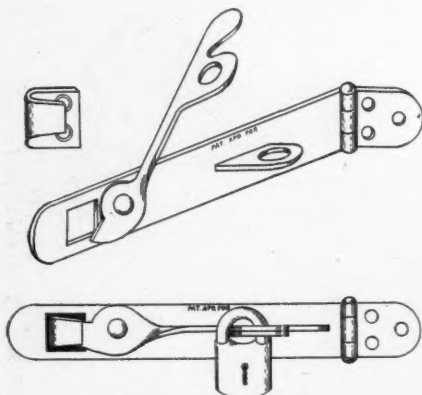
The portable barrel carrier is built of steel throughout. The wheels have ten

spokes and are 30 in. diameter. The frame is constructed of heavy 1x1x3 1-16-in. steel angles. This gives strength and rigidity to the axle, preventing the spread of the wheels from heavy loads. A grip chain that slips around the barrel holds it fast. A fixture on the axle keeps the barrel from tipping backward. The price of this carrier is \$16.

### Commercial Car Door Lock

A lock for commercial car doors that is said to take the place of a hasp, a handle, and a lock, and which does not rattle, has been designed by William Church, chief engineer, Variety Mfg. Co., 2958 Carroll Ave., Chicago, Ill. This lock is simple, durable and inexpensive.

A wedge shaped lever, fastened to the main hinge at one end, when brought down,

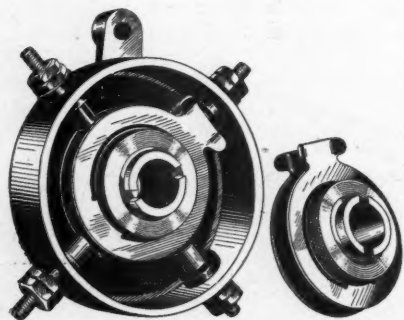


**Commercial Car Door Lock**  
Designed by the chief engineer of the Variety Manufacturing Company, Chicago, Ill.

engages at one end a projection coming through a hole in the hinge and near the other end lies on a shelf with a hole for a padlock, similar to one in the lever arm. In this way the lever is held firm when the door is closed. When the door is open the hasp swings back, acting as a handle. The lock is so fastened that no screws or bolts holding it to the door can be removed. The retail price of this device is 75 cents.

### The Dean Knife Timer

The Tisch Auto Supply Co., 215 Division Avenue, S., Grand Rapids, Mich., is offering the Dean timer for Ford cars. This timer is claimed to increase the en-



**Dean Knife Timer for Fords**

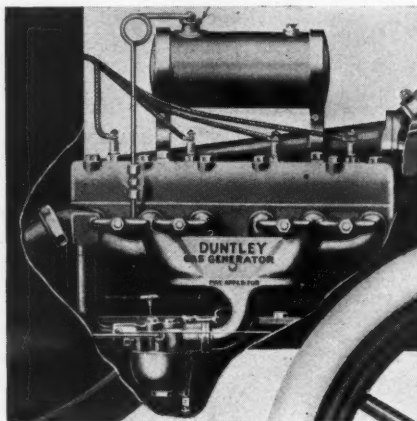
gine speed, consume less current and gasoline, and to have a greater wearing quality than the roller type of timers.

The contact is made by two hard-tempered, 60 deg., dynamo-steel spring knives passing over both sides of the high-tempered tool-steel terminals, and coming in contact with no other substance. The shell is constructed of a special metal, said to draw less moisture than the steel shell. This shell is insulated against short-circuiting.

The Dean timer facilitates cold weather starting because the contacts are not affected by moisture or the congealing of oil. When once installed there is said to be no need for removing it for cleaning or adjusting.

### The Duntley Hydro-Pneumatic Gas Generator

A device which generates a gas from a mixture of gasoline, kerosene, steam and air is being distributed by the Chicago Pneumatic Tool Co. This attachment is said to supply the engine with a perfect combustion mixture which makes it start quickly, accelerate easily and smoothly,



**Duntley Hydro-Pneumatic Gas Generator**

An ingenious device which handles low-grade fuel, and is said to give a clean, powerful explosion, with no resulting odor, smoke or vapor. It is here shown installed in a Ford car.

makes it carbon free and flexible and adds power to it. The device is simple in construction. There are no moving parts, no complicated adjustment and the installation is made without boring any holes.

By burning a low-grade fuel effectively this gas generator saves fuel cost and it is claimed that, besides the elimination of carbon, there is no odor, smoke or vapor resulting. Hydro-pneumatic gas can be developed from any cheap fuel mixture by this device. The installation can be effected in thirty minutes without machine work. The Duntley Gas Generator Co., 1615 Michigan Avenue, Chicago, Ill., is the manufacturer.

THE INDUSTRIAL SITES ASSOCIATION OF AMERICA, INC., 115 Broadway, New York City, has been formed to solve the problem of manufacturers who are seeking new locations. The I. S. A. A. has undertaken to meet the needs of those who are desirous of securing locations by compiling and classifying data concerning properties, sites, buildings, road and water facilities, labor conditions, population, etc., of all towns and cities where manufacturing plants could be advantageously established. Every detail is to be certified as a safeguard against misrepresentation. Manufacturers can depend on the accuracy of all information supplied. Manufacturers will be given free access to all data in the possession of the Association and the entire service is offered without charge of any kind.

### The LesGass Fuel Device

This device is said to increase speed, economize fuel, reduce carbon deposits, lessen gear and clutch trouble and give a quiet, smooth running engine. The Les-Gass device acts as a carburetting apparatus, breaking the gas up more thorough-

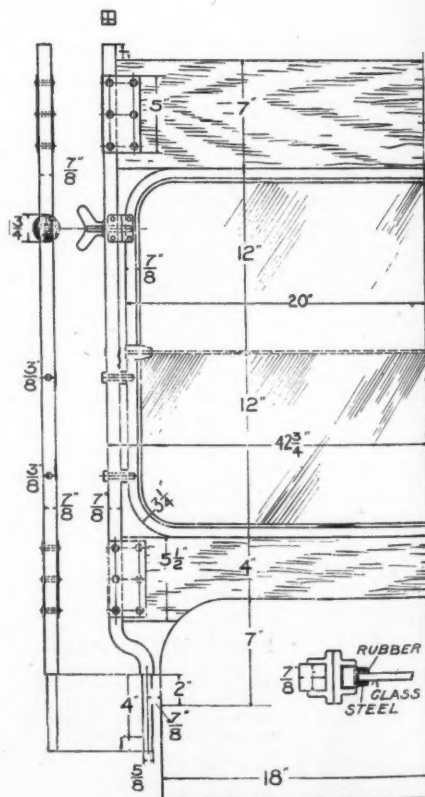


**The LesGass Device**

When installed in the intake pipe it breaks up the gas, mixes the gas and air, and forms a better combustion mixture.

ly and mixing the air and gas more evenly. There is nothing in the construction of this device to wear out and it will last as long as the engine.

In installing, it is inserted in the intake pipe, where it connects with the carburetor. It is made in six sizes to fit any automobile, motor truck, gas tractor or any gasoline engine. The price is \$2 and in ordering the diameter of the intake pipe should be given. The LesGass Mfg. Co., 403 Redge Bldg., Kansas City, Mo., manufactures this fuel economizing device.



**A New Windshield for Trucks**

The Banker Wind Shield Company, Pittsburgh, Pa., is placing a new Model 12 windshield on the market. This shield is placed between and attached to the dash and the roof of the cab. It eliminates the use of stay rods and cab supports. This shield is of the rain-vision type and is made of quality material, making it durable throughout.

"A little knowledge is a dangerous thing." The CCJ keeps you fully posted



## Warner Two to Three-Ton Truck Transmission

The Warner Gear Co., Muncie, Ind., has designed a new gearset to meet the standard specifications of the Government for Class A military trucks. This assembly can also be used on commercial cars of from 2 to 3-ton capacities.

The transmission, Model T53, is a four-speed forward with one reverse gear-set mounting below the cross-frame members, making it easily accessible for removal, inspection or repairs.

The housing is of cast iron with a drain plug at the bottom of the case and an oil filler plug located on the right side, giving the proper level of lubricant. All the gears are of forged, heat treated and carbonized alloy steel of 5-in. pitch and 1¼-in. face width, with the exception of the countershaft, low-speed gear, which has a 1⅜-in. face to allow the larger gear of the double-stepped, reverse gear to mesh with it and start rotating before the smaller integral gear comes into engagement with the 36-tooth, mainshaft gear. This allows easy engagement of the three gears in the reverse train. Both the countershaft and mainshaft are of alloy steel, heat treated and carbonized. The mainshaft is splined for six keys. The front and rear connection are standard S. A. E. tapers. The shafts and gears are mounted on annular bearings. A double row bearing is used at the rear to carry any excessive load.

The gear shifting and interlock mechanism is carried as a complete unit in the cast-iron frame which forms the cover of the gear box. When the cover bolts are removed this entire unit can be lifted, which allows

a thorough inspection of the gear box interior. The direction of the different shifts is according to Government specifications. The countershaft reverse gear, cut integral with the shaft, and the construction of the stepped sliding reverse gear, allow a reduction of 4.99 to 1 on low speed and the lower reduction of 5.78 to 1 on reverse; required features of the army truck operation.

### The New Model C30A Control

Model C30A control, designed to operate Model T53 transmission, is mounted on a cross-member at the right of the driver, and

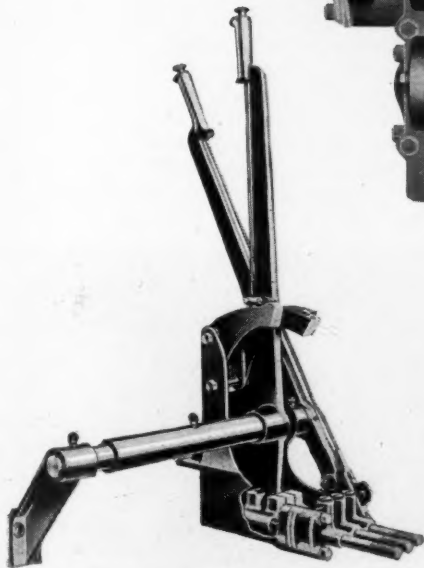
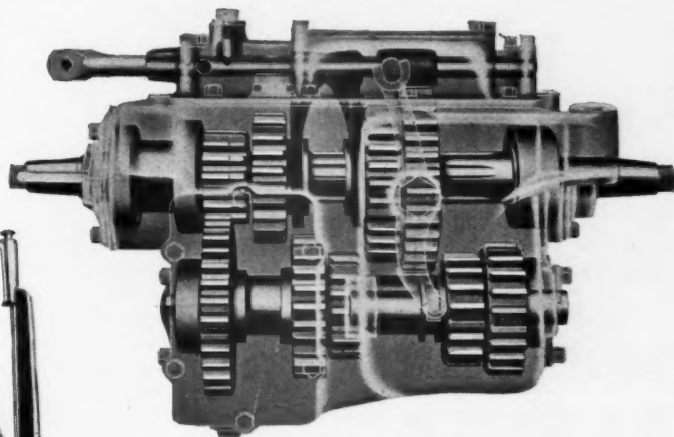


The Model K12B Clutch

A part of the gearset assembly for military trucks and commercial vehicles

is operated with the right hand. The construction is very heavy. In accordance with the army specifications, it is of the "H"-plate sliding type. Both the control and the brake levers are of drop-forged steel. Castings are of malleable iron. Ample provision

The Warner Model T53 Transmission for Military and Commercial Trucks



The Model C30A Control

Designed to operate the new model T53 transmission of the Warner Gear Company

is made for lubrication. Adjustable spring plunger poppets hold the shift blocks in neutral position until the gears are shifted.

### The Warner Model K12B Clutch

The clutch of Model K12B is of the multiple disc, dry-plate type, and has seven sets of steel discs, with wire asbestos facing attached to the outer or driving discs. The driving discs are serrated on the outer diameter to distribute the driving force over a greater area and prevent any peening action, thus avoiding a destructive backlash in the clutch.

Three coil springs furnish the pressure with allowance for adjustment on each spring. This adjustment can be made from

the hand hole in the top of the housing. The thrusts are self-contained when the clutch is engaged. Ball bearings are used throughout. These are lubricated from an oiler in the top of the housing, the oil flowing through a lead drilled in the clutch shaft with cross-drilled holes to throw the oil directly into the bearings.

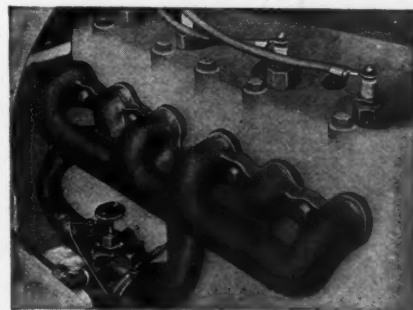
Means of adjustment are furnished for the throw-out bearings which are said to assure permanent position of the clutch pedal. This adjustment also allows suitable travel of the clutch pedal before the clutch brake comes into action.

The cast-iron housing of the clutch bolts against the flywheel housing of the motor, as does a unit power-plant transmission, and gives a water, oil and dust-proof construction, allowing easy removal without disturbing any other important parts of the chassis.

### A Kerosene Vaporizer

Since kerosene is considered to be a more powerful fuel for automobiles than gasoline, if it is properly vaporized before entering the cylinders, a device that produces heat enough for kerosene vaporization would materially decrease the cost of fuel. The Vaporator is a device designed to furnish enough heat to vaporize kerosene without producing excessive engine heat.

Gasoline is used to prime the engine and is obtained through a thumb screw from an auxiliary tank in front of the driver's seat. The kerosene is always flowing into the carburetor, and, after a few minutes' run-



The Vaporator Installed on the Engine

ning on gasoline, it begins to vaporize, when the gasoline thumb screw is closed and the car run on kerosene. A connection between the Vaporator and the radiator overflow is designed to automatically admit steam to the cylinders when carbonization threatens.

The Vaporator consists of a few simple parts. A special manifold replaces the one on the car without the need of drilling holes. A curved strip of heavy gage sheet iron, lined with a heat retaining mineral preparation fits over the manifold. A 1 1-3 gal. gasoline tank fits flatly against the front of the driver's seat. The kerosene is carried in the regular gasoline tank, on which no alterations are necessary. Flexible tubing connects the gasoline tank and the radiator overflow with the Vaporator. The price of this device is \$16.50. It is being offered by the Vaporator Mfg. Co., 2737 Washington Avenue, St. Louis, Mo.



## The New Sanford Three and a Half Ton Truck

**W**E are building what we confidently believe will ultimately prove to be one of the first-choice trucks of the country. We will build into our trucks the good, substantial service features that have withstood the test."

This is the way in which E. A. Kingsbury explains the objects and purposes of the rejuvenated Sanford Motor Truck Co., of Syracuse, N. Y. Mr. Kingsbury, together with E. A. Dauer and J. E. Gramlich, all previously connected with the Chase Motor Truck Co., will be in active control of the management, sales, and production of the concern.

The line of trucks manufactured will embrace 1- and 2-ton internal gear drive and 2½-ton, 3½-ton, and 5-ton worm drive models.

Balance from front to rear end, speed on high gear and great tractive effort on low gear are claimed features.

Throughout the chassis of the 3½-ton model, high grade units are employed and the greatest care has been exercised to produce the proper scientific balance of power and strength between these various units. In this model has been embodied a normal operating speed of 13 miles an hour on high gear and great tractive effort on low gear, due to the relation of engine speed, power transmission, and rear axle reduction ratio.

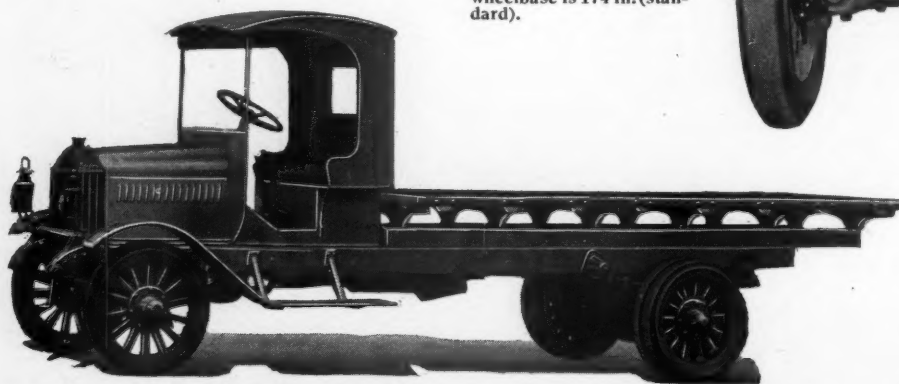
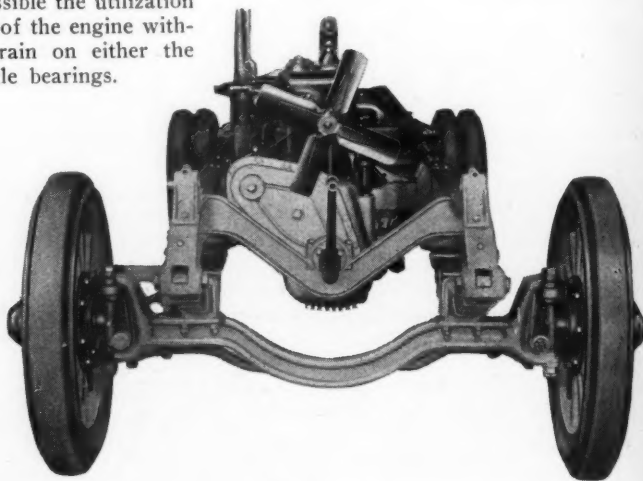
This design makes possible the utilization of the maximum power of the engine without imposing undue strain on either the transmission or rear axle bearings.

All parts are designed to withstand the maximum engine effort with the least degree of wear. Accessibility has been carefully considered, giving a complete unit that can be readily inspected, oiled, and tested.

The personnel of the present Sanford Truck Co. is: president, J. F. Durston; vice-president, C. Hamilton Sanford, and secretary and treasurer, F. F. Sanford.

### Sanford Three and a Half Ton Chassis

This chassis has a 4½ x 6 in. engine of the L-head type with the cylinders cast in block. The wheelbase is 174 in. (standard).



The Sanford Three and a Half Ton Chassis With a Platform Body

The engine is of the "L" head type, with four cylinders 4¼ x 6 in., cast in block; suspension is three-point. It develops 37½ h.p. at 1000 r.p.m., and is mounted so as to be readily accessible without removing from the frame.

The crank case is gray cast-iron, giving it great strength and durability. It is divided horizontally in halves, the upper half containing the complete crank shaft bearing, the lower half serving as an oil pan.



Officers of the Sanford Motor Truck Company, Which is Producing a New Three and a Half Ton Model

Reading from left to right they are: J. F. Durston, President; C. H. Sanford, Vice President; E. A. Kingsbury, General Manager; E. A. Dauer, General Sales Manager; J. E. Gramlich, Chief Engineer and Designer, and W. F. Himmelsbach, Assistant Engineer



The crank shaft is drop forged of high grade steel, properly heat-treated. Bearings are accurately ground to size.

Cylinders are of special grade cast-iron mixture, accurately machined and interchangeable. They are provided with a large water jacket so arranged that water is discharged from the pump directly beneath the valves. They are also provided with a specially designed cover which can be quickly removed, allowing free access to the water jacket space, for cleaning and inspection.

Pistons are cast-iron, ground to size and provided with oil recesses.

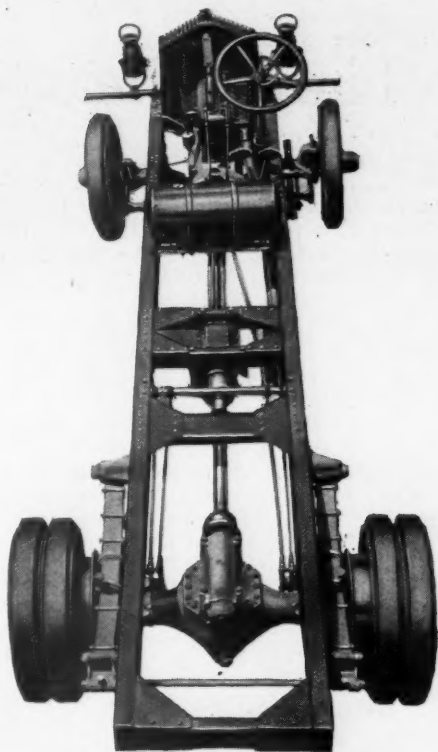
Piston rings are accurately fitted to the pistons and are ground on the circumference and sides to exact standard dimensions.

The connecting rods are drop forged from carefully selected open-hearth steel. The upper end of the rod is bushed with phosphor bronze while the lower end is fitted with adjustable die cast or bronze shell babbitt-lined bearings.

All main and crank bearings are bronze, babbitt lined and are accurately reamed and hand scraped to perfect fit. The camshaft bearings are phosphor bronze.

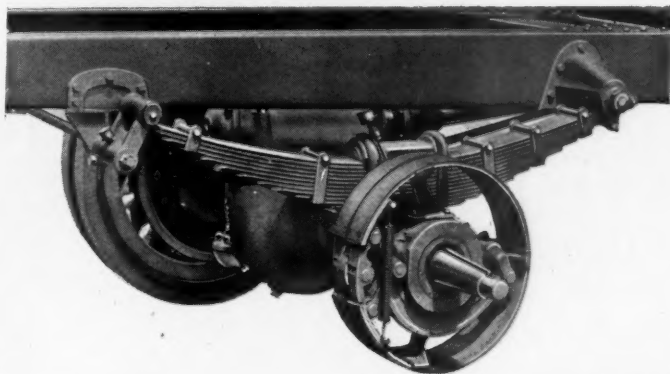
Valves are of cast-iron head, electrically welded to a soft steel stem. They are accurately machined and ground and are interchangeable.

Timing gears are cut helically on automatic robbing machines to secure best results. Provision is made by use of flanges



Plan View of the Sanford Chassis

Note the transmission supported on two cross members amidship. It is connected to the clutch by means of the Daimler type of universal joints and has four speeds forward and one reverse.



Rear Right Wheel of the Sanford Truck Removed, Showing the Brakes and Axle.

and thrust screws to take care of end thrust or end play that may occur after long use. Gears are easily accessible after the gear case cover has been removed.

Forged in one piece from open-hearth steel are the cams and camshafts.

The intake pipes may be readily removed and are said to be so designed that cylinders receive an absolute uniform mixture.

The exhaust pipe is cast iron, provided with an expansion joint at the outlet end.

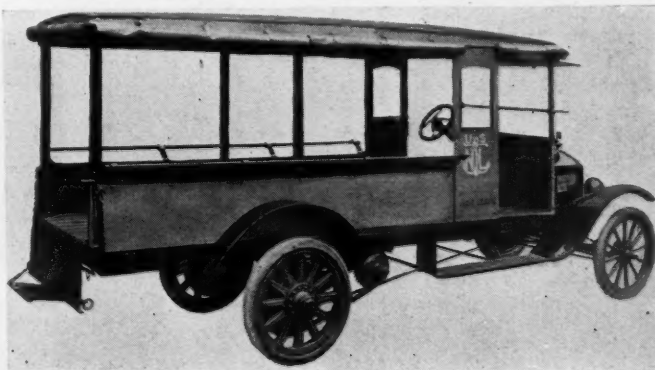
The circulating pump is of the centrifugal type with a bronze runner and bronze bearings.

THE HORSE IS DISPLACING THE AUTOMOBILE in China. After 66 years of activity the foremost horse vehicle concern in that country is now steadily advancing in the sale of automobiles at Shanghai. The horse-drawn vehicle devices are now gradually giving way to the steady encroachment of the automobile department, which is conducted by an American expert, with the result that automobiles and motor equipment are taking first place and horse-drawn equipment is being relegated to the rear.

### A General Utility Truck for War-Time Purposes

One of the new creations in the truck line that the war has caused to be produced, is the truck turned out by the Maxfer Truck & Tractor Co., Chicago, and presented to the Emergency Drivers of the Women's Section of the Navy League, Chicago branch.

A Maxfer Truck Unit, Fitted With a Variety Body, Being Used by the Emergency Drivers of the Women's Section of the Navy League, Chicago.



Owing to the tremendous amount of work that the section is called upon to do for the Federal Government and the Red Cross, the pleasure cars that are driven by and donated by the women received usage for which they are not constructed and the Maxfer concern was approached and asked to donate one of their Ford Units for the work. This, Messrs. Henry and Baxter, of the Maxfer Co., consented to do.

The question of a suitable body then arose and the Variety Mfg. Co., also of Chicago, agreed to design a body specially suited for that work.

The body is so built that the truck can be the curtains. It is finished in the colors of the navy, blue and yellow, and so constructed that it can be flushed out with a hose at any time without harming it, thereby keeping the interior in a sanitary condition.

The body is so built that the truck can be used for delivering packages or supplies for the various departments of the Government, including Red Cross supplies. Benches, seats or stretchers can be installed and the truck used as an ambulance.

The tailboard is uniquely installed, with an attachment that can be dropped with the tailboard, the attachment forming a step that disappears when the tailboard is thrown back into place and chained.

### Palmer Cord Tubes

A tube reinforced with a specially woven cord is being offered by the Palmer Tire & Rubber Co., St. Joseph, Mich. The cord is embedded in the gum and the tube carries a part of the strain ordinarily carried by the casing alone. This feature gives the casing longer life and easier riding qualities.

The cord structure is fashioned on the double curve to fit the casing without wrinkling at the rim. The air tube proper is rubber riveted through and moulded over the cords on similar curves. The "lock-looped" structure of these cords is said to permit a stretch in any direction, enabling the tube to follow the changes in the contour of the casing, due to load and road conditions.

The Palmer safety cord tubes are claimed to prevent blowouts, to bridge cuts, bruises and weak spots and increase the life of the casing without stiffening its walls or generating heat. The prices range from \$6.35 for the 30 x 3-in. size to \$14.15 for the 37 x 5-in. size. These prices, however, are subject to change.

## The Winther Line of Heavy-Duty Trucks

**T**HE Winther Motor Truck Co., Kenosha, Wis., is producing four heavy duty trucks, conservatively rated by the makers at 4000, 6000, 8000 and 12,000 lb. respectively. All follow the same general lines, due allowance, of course, being made in each instance for structural variations in keeping with the capacity of the several models.

Martin P. Winther, president of the company bearing his name, spent some time with the United States troops on the Mexican border as technical expert, observing the use of trucks under the strenuous conditions imposed by military service. The Winther is based to a considerable extent upon the experience thus gained, numerous features of unusual interest being incorporated.

Instead of the customary pressed steel frame, for example, ship channel alloy steel is used, the stock being unusually heavy.

There are special oiling devices so that lubrication of ordinarily inaccessible parts can be looked after without crawling under the truck, a point calculated to appeal to the driver as well as to eliminate much of the trouble that is so plentiful in this connection.

Another distinguishing mark is the flat-tube radiator with cast top, sides and bottom, and with a three-point suspension that, together with the heavy construction, is calculated to withstand any stress.

For the purpose of detailed description, Model 87 is selected as representative of the line, the variations in the others being, as noted, of a minor nature, in conformity with the varying demands.

The maximum rated capacity of this truck is 8000 lb., body allowance, 2000 lb., making the maximum allowable weight on the chassis including body and payload, five tons.

Standard wheelbase is 156 in. with 12 or 16-ft. optional. The frame is ship channel rolled steel, 7-16-in. gage, with a maximum depth to the side members, which are straight for their entire length, of 7 in., and a 2½-in. flange. The frame has five cross members, hot riveted and gus-

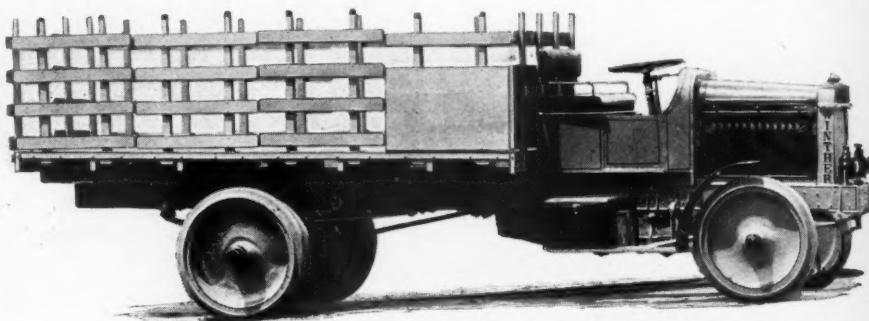
seted, giving very rigid construction in which attention has also been paid to appearance, the ends being smoothly turned. Choice of seven lengths of frame on the several wheelbases is given, ranging from 10 ft. on the 12-ft. wheelbase to 16 ft. on the corresponding wheelbase.

Compactly mounted in a casing cast integral with the flywheel housing is the Borg & Beck one-plate dry clutch, with a 12-in. face.

A very neat support has been developed for the clutch throwout shaft and the center control, the mounting being such that a birdseye view would resemble a small unit

steel, heat treated. The load carrying member is a drop forged rectangular bar of nickel steel, affording a jointless axle from hub cap to hub cap, as the wheel spindles are cast integral. Brake drums measure 29½ in. In Model 87—the 8000 lb. type—the axle has a road clearance of 16 in., and a tread of 62½ in. The differential is M. & S. locking.

Special attention has been paid to braking, both sets operating on the generous drums above noted. Brake shoes are lined with Raybestos, and are 24-in. diameter. Both sets of control rods are located back of the solid rear axle, anchored to heavy



The Winther Heavy-Duty Four-Ton Truck, Fitted With Stake Body

Standard wheelbase is 156 in., with 144 in. and 192 in. optional. A 29 h.p., four-cylinder Wisconsin 4½ x 6 in. engine is used, and final drive is through a Celfor internal-gear axle, mounted in unit with a drop-forged dead axle.

transmission. The lower part of the bracket is open, however, so that the clutch is easily accessible. The clutch throwout bearing is lubricated by means of a flexible tube running to a grease cup placed on top of the floor board, within easy reach of the driver, thus remedying one of the shortcomings that frequently manifests itself in this quarter.

The Cotta transmission is located amidships, and is anchored at three points to the cross members of the frame. Connection between the clutch and transmission is through a 2¼-in. tube and Spicer universal joints, the same method being employed between the gearset and rear axle. The transmission is of individual clutch type, with control lever that is positively locked in every position.

Final drive is through a Celfor internal gear axle mounted in unit with a drop forged rectangular dead axle. The ring gear and pinion are of 3½ per cent. nickel

brackets attached thereto, with the strain still further equalized by placing one set of rods on either side of the rear springs.

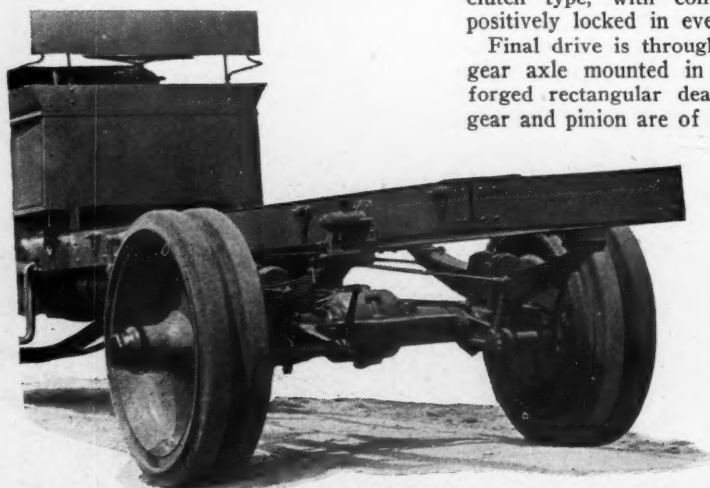
Both sets of springs are semi-elliptic, chrome vanadium steel, heavily shackled at the rear ends. The front are 46 x 3 in., the rear 56 x 4 in. Besco cast steel single disc wheels are used, the front being 36 and the rear 40 in. Tires are 5-in. single in front and 5-in. dual or 10-in. single at the rear.

The front axle is an I-beam Timken, with Timken bearings throughout. The steering gear is Ross worm and nut adjustable, in a very accessible position in the frame.

While there are no particular features in connection with the radiator and 20-in. fan, radiating surface is such that it is guaranteed to keep the car cool at high altitudes and high temperatures.

Lubrication of inaccessible parts has been accomplished by the installation of oil cups and long terminal tubes leading to points that might otherwise be neglected.

The price of the Model 87, with standard wheelbase, is \$3600, the long wheelbase being listed at \$3675. The other models range in price from \$2250 to \$4600.



Rear Axle and Frame Detail of the Winther Four-Ton Truck

CONTINENTAL MOTORS CORP., Muskegon, Mich., will devote its entire plant to the manufacture of truck engines. It is said that the company has received a large order from the Government, and for this reason the manufacture of passenger car engines will be taken care of at the Detroit branch.



## The New Steamotor Truck Has Doble Engine

**T**HE Steamotor Truck Co., Chicago, licensed under the Doble patent to manufacture steam power trucks, state that they have overcome the four main objections to application of steam power to the motor vehicle—1st, the danger of gasoline explosion; 2nd, difficulty of starting; 3rd, manual and uncertain control of fuel and water supply, and 4th, necessity of frequent replenishment of water.

The power plant, designed by Abner Doble and used in the steamotor truck, consists primarily of the steam and water system, the fuel and combustion system, and the engine or power transmission system.

The Doble generator in point of construction is based on the water-tube type, and carries a water level in the evaporating zone.

grouped vertical tubes, pass over the bridge wall, and a large number of their remaining heat units are absorbed by the relatively cool water flowing slowly through the economizer sections.

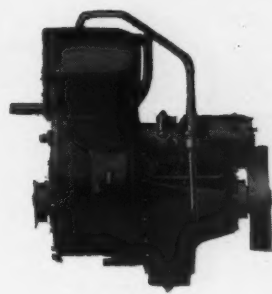
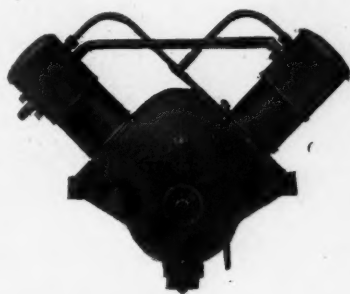
The normal steam pressure in the generator, while power is being used, is 600 lb., which means a terrific acceleration with the opening of the throttle. Pressure is maintained at this point by an automatic device which cuts off or renews the fuel supply according to the variation of the pressure from normal.

To prevent any possibility of an accident to the generator tubing, a safety valve is also attached, which operates if the steam pressure reaches one thousand pounds.

quantity of standard cylinder oil to the water. The oil is pumped into the generator along with water, and there performs several valuable functions. First it coats the interior of the generator with a very thin layer of oil. While this coating is thin at ordinary temperatures, it is very much thinner at 485 degrees F., which is the approximate temperature of the generator at 600 lb. pressure.

As the bubbles of steam break through the water surface, they take a certain amount of oil along with them, thus lubricating the throttle valve, and the engine.

The engine used in the Steamotor truck power plant is very simple and contains but fifteen moving parts. It is a two-cylinder,



Front and Side Views of the Steamotor Engine

### Steamotor Truck Chassis

Has V-type engine with 4 in. bore and 4 in. stroke, and cylinder blocks set at an angle of 90 degrees to each other.

The combustion chamber is directly beneath the steam generating sections, while the exhaust for burned gases is below the economizer sections.

The intake water manifold delivers water simultaneously to the economizer sections through their lower headers, the water being forced in by a crank-driven plunger pump. When the economizer sections are completely filled, the water overflows from the upper headers into a manifold which delivers it simultaneously to the lower headers of the evaporating sections.

Here the water level is maintained about half way up the generator by means of a by-pass valve, so arranged that when the regulator tube is filled with steam and consequently hot, the by-pass valve is closed by the expansion of this tube, forcing the water from the pumps to lift the check valve and enter the generator.

As the water level rises the regulator tube is filled with water from an exposed pipe. This water not being in circulation in the generator is quite cool, so that the relatively large change in temperature causes the regulator tube to contract, thereby opening the by-pass valve and allowing the water to return to the supply tank.

The hot gases rise from the combustion chamber, giving up their heat to the closely

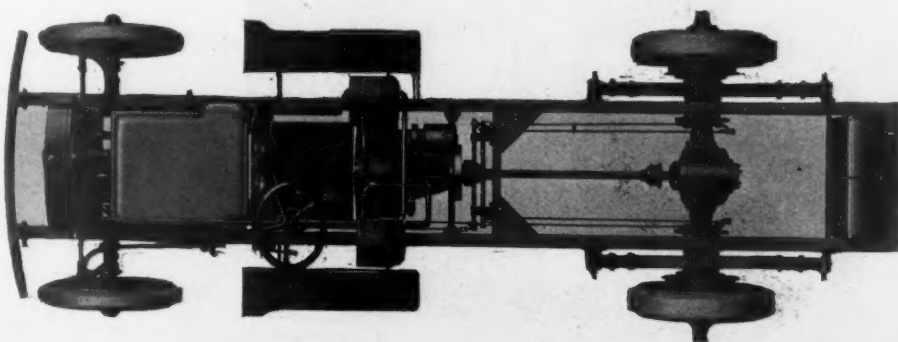
The exhaust steam from the cylinders is carried to the top of the radiator, and is forced down through it by the pressure of following steam.

The water of condensation enters the water tank very near the bottom, so that any steam that may find its way to the tank is condensed in bubbling up through the water. This will occur only when accelerating rapidly from a slow speed or pulling slowly on a heavy road.

The lubrication of the throttle and cylinder valves, the cylinder walls, the interior of the generator, and the water pumps, is accomplished by the addition of a small

single expansion, double-action engine. The counter-flow principle is employed in order to insure that maximum torque be obtained at any position of the crankshaft.

The slide valves, one for each cylinder, take care of both the inlet and exhaust. They are on the front side of the cylinders, and are designed to lift, to allow the escape of any water that may be in the cylinders before starting. The valves are actuated by a specially designed Stevenson link valve gear which allows a cut-off of about 80 per cent. of the stroke for starting. This valve gear also reverses the engine without additional devices.



A Plan View of the Chassis of the Steamotor Truck

In arrangement, the engine is of the V-type. The cylinders are set at an angle of 90 degrees, and one crank serves for both. The crankshaft is carefully counterbalanced so that vibration and wear due to this cause are practically eliminated. The cylinders are 4-in. bore and 4-in. stroke.

The crankcase is an aluminum alloy casting, and contains all of the moving parts of the engine except the pistons and valves.

The ball bearing eccentrics for the valve gears are on a return crank just ahead of the main crank. The eccentric which drives the boiler feed-pump and the lubricating pump, together with the governor, are situated between the main bearings.

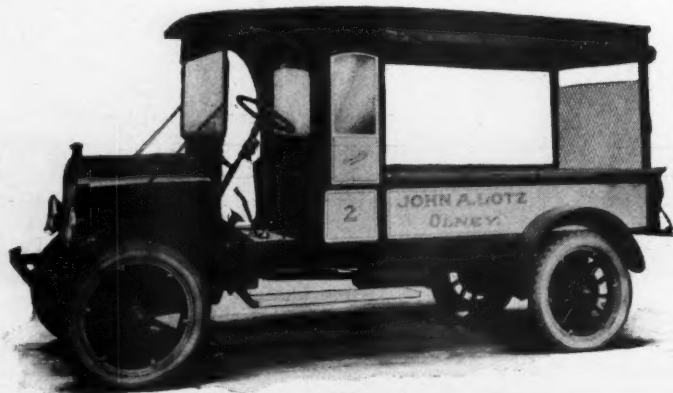
Crankshaft and the main bearings are annular roller. The valve gear and pump eccentrics run on ball bearings, while all of the other bearings, such as wrist pins and valve gear bearings, are hardened steel, running in hardened steel bushings.

The lubrication system is a splash and force feed combined. The eccentrics, connecting-rods and governor are lubricated by splash, and the cross-heads and wrist pins are lubricated by pressure-oil, fed by a plunger pump located in the bottom of the crankcase. An adequate strainer is provided, and a relief valve regulates the oil pressure.

The engine is fastened to the frame at three points and the power is transmitted to the rear axle by a propeller shaft. Two universal joints of rugged construction are employed, and adequate lubrication is insured by a duct from the pressure feed of the engine.

Air, drawn through the radiator by a small electrically driven multivane blower, passes the spray nozzle with a sufficient velocity to draw out the kerosene and atomize it. This velocity immediately decreases, due to the widening of the venturi tube, and the fuel mixture is ignited by an electric spark. As soon as the burner is lighted the spark ceases automatically. The combustion takes place in a chamber made of special refractory material, which attains a very high temperature, and positively insures complete combustion by heating the gases before they burn, and by its catalytic action.

CLUM MFG. Co., Milwaukee, Wis., has become sole licensee under Cox Patents No. 841,844, 1907, and No. 1,015,300, 1912, covering the manufacture of Key Operated Switches.



The Brinton One-Ton Worm-Drive Delivery Truck

### Brinton Delivery Truck

The Brinton Motor Truck Co., 5740 Cherry Street, Philadelphia, Pa., has brought out a new one-ton, worm-drive delivery truck. This truck has a 4-cylinder, 4-cycle, 25 h.p.,  $3\frac{1}{4} \times 5$ -in. Wisconsin engine. It is a unit power plant and the cylinder head is removable. The oil is circulated by a plunger pump. A 2-in. crankshaft runs on  $3\frac{1}{2}$ -in. crankshaft bearings. The ignition is obtained through a high-tension magneto with a set spark. A Rayfield carburetor is used.

The radiator is the tubular type, specially mounted on springs, with a thermo-siphon circulation. The transmission is heavy and integral with the engine, giving three speeds forward and reverse, and running on large



The Two-Ton Offering of the Globe Motor Truck Company, Which Sells at \$1985

annular bearings. The control operates directly over the transmission with an improved ball and pivot type of shift. The flexible dry-plate clutch, with Raybestos lining against the steel plates, is said to need but little attention to remain in good working order.

The tubular drive shaft, made from nickel steel, is claimed not to "whip" at 35 m.p.h. The Duplex internal expanding brakes on the rear wheels are 50 per cent. oversize. The semi-elliptic springs at the front and rear are strong, but designed to ride with ease and resilience. The front axle is a drop-forged I-beam, fitted with roller bearings. The rear axle is worm driven and equipped with annular ball bearings. The spokes of the wheels are oval and the special pneumatic tires are standard  $33 \times 4\frac{1}{2}$  in. The wheelbase is 122 in. and the tread is 56 in.

The frame is nickel steel, channel sections, 4 in. deep. Sheet steel fenders are placed over all the wheels. The standard equipment of the chassis includes a tool box, full set of tools, horn, windshield, elec-

tric headlights, tail lamps and non-skid tread tires mounted on Firestone demountable rims. The price of the chassis is \$1250 f.o.b. Philadelphia. A 2-ton chassis can be obtained for \$2400.

### The Globe Motor Truck

The Globe motor truck, manufactured by the Globe Motor Truck Co., East St. Louis, Ill., promises to be a sturdy bidder for business in its line. Financed by some of the leading business men of St. Louis, this concern is operating a large and well equipped factory at Eighteenth and Brady Avenues, East St. Louis, and is turning out at the present time four models of high grade, standardized motor trucks.

Model "A," capacity 1 ton, sells for \$1375; Model "B,"  $1\frac{1}{2}$  tons, \$1690; Model "C," 2 tons, \$1985 and Model "SC," also 2 tons, \$2085.

The Globe uses the Continental engine, the dry-plate type, Raybestos faced clutch, "Perfex" solid copper radiator with removable cast tanks mounted on a frame supported by springs, both internal expanding and external contracting brakes located on rear wheel drums; left hand drive control, central control levers, hand throttle, foot accelerator, and semi-irreversible steering gear of the split nut and screw type with ball thrust bearings. Other units used in the Globe truck are: Master carburetor, Eisemann magneto, Pierce-Continental governor, Stewart V-Ray spark plugs, Stewart vacuum tank, Covert transmission, Celfor internal gear drive rear axle, Prudden wheels and Vulcan springs.

Officers of the Globe Motor Truck Co. are: David A. Marks, president; Walter F. Sheehan, vice-president and general manager; Hanson J. Marks, secretary and treasurer; C. R. Porter, director of sales; C. T. Schaefer, chief engineer; Andrew C. Duncan, experimental engineer, and Eugene J. Herr, factory superintendent.

MICHIGAN DROP FORGE Co., Pontiac, Mich., has elected the following officers: B. F. Esgar, president; Hugh O'Connor, president Michigan Wire Cloth Co., vice-president, and Paul A. Leidy, secretary-treasurer. The directorate consists of John H. French, Robert T. Herdegen, Jos. B. Hamblen, Jr., Chas. H. Luce, John O'Connor, J. V. Roemer, Wm. Sparks and J. B. Breyman. New preferred stock was recently issued to secure the necessary funds for expansion. The company now has ample backing.



## The Twin City Four-Wheel Drive Truck

**T**HE principle used in the Ware truck, manufactured by the Twin City Four Wheel Drive Co., St. Paul, Minn., enables the driver to steer the truck true to course, over uneven roads and ruts, without extraordinary effort and, with the service brake operating on the shaft between the transmission and ratio gear, gives the driver complete control of the truck at all times. Ware trucks will be produced in one, two, three and five-ton sizes and will be sold at a price consistent with the class of material and workmanship used in their manufacture.

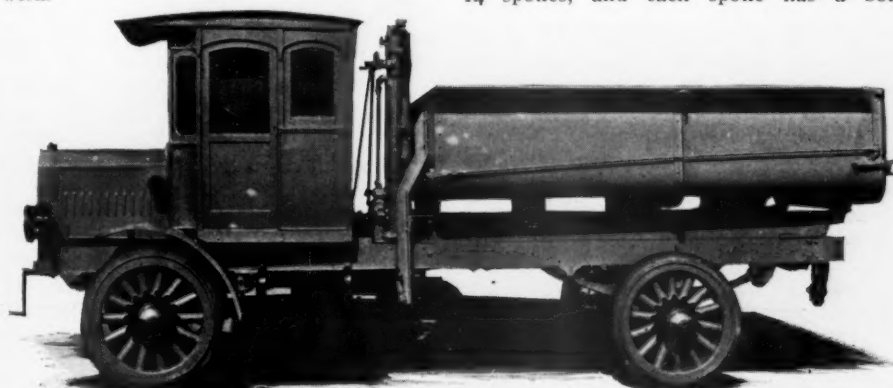
### General Description

The lines of the steel frame are straight with wood filler, and the subframe is parallel with the main side members and rests on heavy cross bars.

The engine has four T-head cylinders cast in pairs. The horsepower varies with the capacity of the truck.

The gasoline is fed from a tank of ample capacity, with strainer above and below. It is under the driver's seat and above the engine so as to enable a gravity flow, regardless of the position of the truck.

The radiator is of ample size and is fitted with a fan fully capable of performing its work.



Ware Four-Wheel Drive Truck Fitted With a Hydraulic-Hoist Dump Body

Emergency brake, control and gear levers are in the center. The clutch is a multiple disc, of the Hele-Shaw make.

The transmission has three speeds forward and one reverse, with gears always in mesh.

The propeller shaft connects with the rear axle, which is semi-floating, gear driven, and running in oil, and by a very simple yet ingenious way the power is transmitted through a drive shaft on either side to the front axle, which is also semi-floating, gear driven and running in oil.

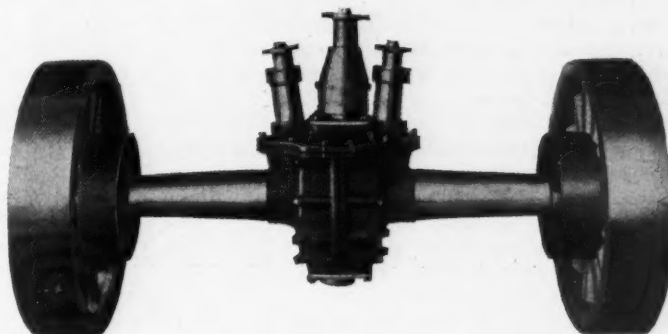
The differential is located on the propeller shaft, thus distributing power to all four wheels.

Axles, both front and rear, are crucible cast steel and are connected with a reach on each side, which completely relieves the springs from the strain when starting, pulling

and stopping the truck; the reach takes care of jerks and thrusts, and all that is required of the frame and springs is to carry the load, and instead of attaching the trailer pull to the frame, a drawbar is attached to the reach, thus eliminating all possibility of jerking the springs loose from the axles. This reach is very rigidly and

### The Rear Axle of the Twin City Four-Wheel Drive

It is of the semi-floating, bevel type, with Timken bearings in all four wheels and Bower roller bearings in both axles.



securely fastened to the front axle, and is underslung and hinge-looped to the rear axle, which furnishes sufficient flexibility to allow the truck to conform to the uneven surface of the roadbed without strain on any part of the frame construction.

Wheels are of the military type, having 14 spokes, and each spoke has a bolt

saves the truck as well as the tires. The emergency brake is also of the contracting type, and is applied by a lever in a convenient place for quick action, and operates on each rear wheel. Both brakes are lined with Raybestos lining.

The chassis only is built by this concern, but any form of body can be furnished.

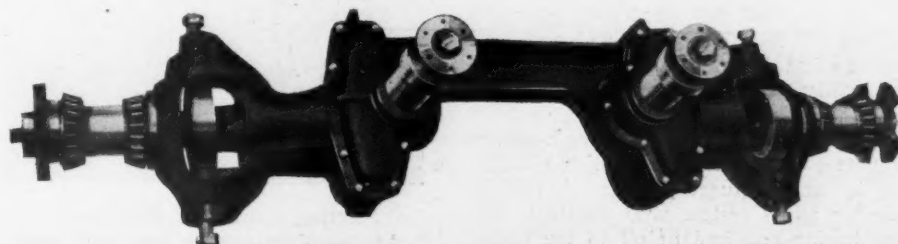
### Improvements Announced in Parry Products

The Parry Mfg. Co., Indianapolis, Ind., announces a full line of bodies for the new 1-ton Ford truck to be offered as soon as the trucks are placed on the market. This line will comprise a number of styles, including express and panel bodies.

This company is also producing a line of platform and express bodies of all kinds for the Maxwell one-ton truck and for the Chevrolet chassis.

The usual line of bodies for the regular Ford chassis is to be continued, but the bodies are being made longer and somewhat lighter with a greater carrying capacity than before. It is said that a number of refinements have been incorporated in this new line that enhance the quality and attractiveness of the car.

FIFTH AVENUE COACH Co., New York City, has been forced to go into the manufacture of its own trucks by the war conditions. A four-story plant is being erected at 132d Street and Broadway at the estimated cost of \$1,000,000. The company has already assembled 60 new trucks and is planning to turn out 200 under its own specifications. Before the war hundreds of the buses were imported from France.



The Front Axle, With the Driving Mechanism, of the Ware Truck

It is a simple combination of shafts, with universal joints that permit of both steering and applying power

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

## United Four-Wheel Drive Motor Trucks

**T**HE thorough test of motor trucks in war and the increasing demand for them in peace, by those who realize the economical and profitable possibilities through their employment over other methods of haulage, have induced a combination of capital and experience to form an organization in Chicago, called the United Four-Wheel Drive Truck Corp., with an authorized capital of \$5,000,000.

Plans are under way for the erection of a manufacturing plant in the Clearing Industrial Division, of Chicago, but manufacturing is now under way in a temporary plant at 22nd and Western Avenue, Chicago, Ill.

Prominent engineers in four-wheel drive truck construction were engaged for the mechanical details and when, in the estimation of the organizers, these men had secured the most desirable ideas in existing trucks and originated improvements of vital importance, they then started building the United Four-Wheel Drive truck.

In specializing on the four-wheel drive for their three sizes of trucks—the 1½, 3 and 5 tons—this feature is embodied in the truck because of its reliability and dependability. The principle of power in all four wheels means equal distribution of the load, the wear and tear and the strain, the elimination of vibration and the securing of power haulage assuring the users of traction through mire, sand, ruts, holes and other road difficulties.

It is estimated that, by the four-wheel drive system, the front axle bears 45 per cent. of the load; the remainder is on the rear axle. Economically there is a gain, as greater force is obtained with the same energy supplied by the engine. A greater saving in tires also follows, because of the more equal distribution of power and weight. The front wheels pull while the rear wheels push. The differential compels each axle to perform its share of the work. With the lifting power on the front wheels, the rear wheels are relieved of the burden, thus preventing shock of tires, frame and mechanism. The power and brake applicable to all four wheels makes the traction so uniform that skidding is practically impossible.

### Power Plant

The engines in the announced specifications of the 5, 3 and 1½-ton trucks are of the four-cylinder, vertical "I"-head type. Cylinders are cast in pairs and are water-cooled. Standard wheelbases vary from 120 to 150 in., while all three models have a ground clearance of 12 in. and a turning radius of 33 degrees. Wheels are wood, of the artillery type, and are fitted with solid tires, both front and rear.

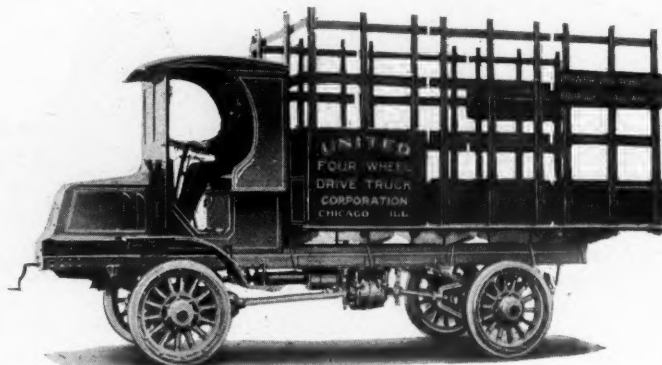
Ignition is by the Bosch high-tension magneto, while cooling is positive, circulating by a centrifugal pump. A positive plunger pump system with constant level and having one lead of oil to the timing gears and one to the rear main bearing furnishes lubrication. The carburetor is a

Stromberg of standard type. The steering gear is of the irreversible worm and sector type, located on the left side. Gear shift and emergency brake levers are located in the center and the fixed spark and throttle levers below the steering wheel. The clutch is a Hele-Shaw of the multiple "V" disc type, with steel friction surfaces. Transmission is of the selective type, with three speeds forward and one reverse, running on roller bearings. A Duplex governor controls the speed of both the engine and truck. Final drive is by a shaft to the rear axle

brake drum between the transmission and reduction gears, giving 8½ times the breaking power of the hand-operated brake. Front springs are semi-elliptic, 36 in. long, and the rear are platform, 42 in. long.

The main frame is of channel steel and the sub-frame, carrying the engine, transmission, clutch and reduction gears on three-point suspension, is angle steel. The cab is of the enclosed type, furnished with windshield and cushion.

Prices are, according to capacities, \$2500, \$4000 and \$5000, respectively, f.o.b. factory.



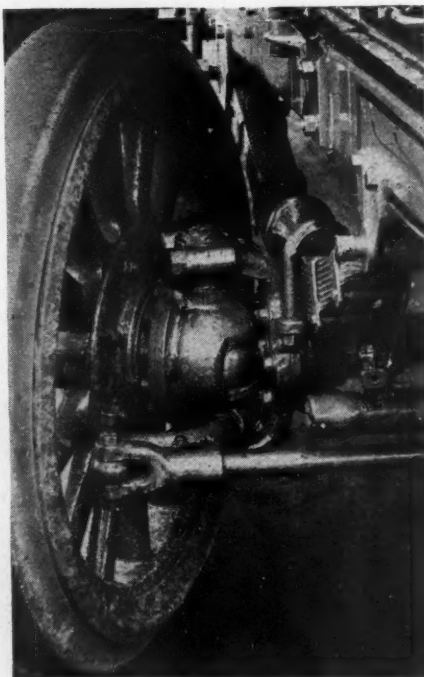
United Four-Wheel Drive Truck With Stake Body

through two standard universal joints. The rear axle is semi-floating, running on roller bearings, and the front axle is cast vanadium crucible steel, also running on roller bearings. There are two sets of brakes, the emergency being external contracting on the rear wheels and operated by a hand lever. The service brake is of the contracting type and is operated by a pedal on the

PACKARD MOTOR TRUCK Co., Detroit, will increase its motor truck output from 600 to 1000 per month. Foreign shipments will be resumed as soon as the Government requests that such aid be given to the Allies, no foreign shipments having been made since December 15th last.

THE MEMBERSHIP OF THE NATIONAL AUTOMOBILE CHAMBER OF COMMERCE now includes 109 complete vehicle manufacturing companies. Forty-three of the members manufacture commercial cars, some of these also making passenger cars. Those recently admitted are: Service Motor Truck Co., Wabash, Ind.; Atterbury Motor Car Co., Buffalo; Dorris Motor Car Co., St. Louis; Hal Motor Car Co., Cleveland; Jordan Motor Car Co., Cleveland; Kleiber & Co., San Francisco; Liberty Motor Car Co., Detroit; Moline Plow Co. (Stephens-Six), Moline, Ill.; Simplex Automobile Co., New York.

COMMONWEALTH FINANCE CORP. has been incorporated under the laws of South Dakota with a capital stock of \$17,500,000, \$10,000,000 of which is 7 per cent. cumulative preferred and \$7,500,000 common for the purpose of financing the purchase of commercial and pleasure cars. An office has been opened in the Trinity Bldg., New York City. The company will purchase from dealers deferred payment paper on cars which they have sold; such paper carrying the endorsement of the dealers together with that of the company can be resold. Purchasers of automobiles will also be financed, the security being a mortgage on the car or contract, whereby the title to the car remains in the name of the Commonwealth Corp. till the last payment is made, together with an insurance policy covering fire and theft.



Steering Knuckle of the United

A feature of the front axle is the construction which allows the universal joint in the wheel driving shaft to be entirely enclosed in an oil-tight housing, yet giving free steering action.



## Menominee Brings Out a New Five-Tonner

The new Model J, 5-ton Menominee truck, produced by the Menominee Truck Co., Menominee, Mich., is more the result of a further development of the 3½-ton job which was brought out by this concern during the summer of last year, rather than the production of a new truck, as this new model embodies practically all of the features of the smaller model, so far as design is concerned, and in appearance resembles closely the smaller but older offering.

### Description of Chassis

The engine is a 4½ x 5½-in. Continental, mounted in a sub-frame suspended at three points. The radiator is of Menominee design and rests upon pneumatic supports, employing a patented principle, originated with the Menominee Co.

The clutch is a Borg and Beck, three-plate type, while the transmission, which is hung amidship, is of the Cotta selective type individual clutch system, having all speed changing gears constantly in mesh and built for heavy duty work.

A Gemmer irreversible heavy worm and gear steering gear is used with a 20-in. hand wheel. Right or left drive is optional.

The front axle is of the Timken drop-forged I-beam type, equipped with Timken taper roller bearings. The final drive is made through a Timken David Brown worm gear and floating nickel steel axle shaft. The worm gear reduction is 13 2-3 : 1.

The frame is of 7-in. heat-treated channel steel, 38 in. wide.

Springs are of special analysis alloy steel, 44 x 3 in. semi-elliptic front and 54 x 4 in. semi-elliptic rear. Both the service and emergency brakes are of the internal expanding type, 4 in. wide, and operating on 24-in. drums. Both the brake systems are equipped with equalizers.

The radius rods are constructed of structural I-beam steel with special analysis steel casting ends. The construction is similar to that of a large universal joint at the forward end, where the rod is attached to

the frame bracket. These rods are practically straight when the truck is loaded, thus relieving the springs of all driving strains and maintaining uniform distance between axle and transmission.

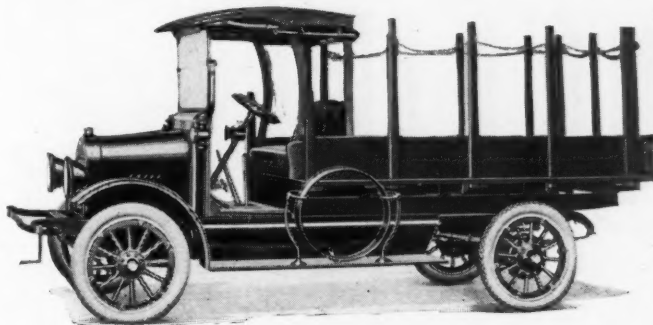
The wheels are of artillery pattern, 36-in. diameter, and carry a 36 x 6-in. solid rubber tire in the front and 36 x 6-in. duals in the rear.

The chassis equipment includes driver's seat, running boards, gas headlights, horn, front fenders and full kit of tools. The weight of the chassis complete is 8200 lb. and it is priced at \$4150.

## Vim Presents New Body Along With Several Improvements

The Vim Motor Truck Co., Philadelphia, Pa., is getting out a Model S body, an especially designed convertible stake body of the platform type, adaptable for all general trucking work. It is of extra heavy white ash construction throughout. Side boards and tail gate are 2 in. high and they together with the stakes are removable, making side loading easy. The driver's seat

The Model S Stake Body Vim Truck Which Sells at \$885



is heavily upholstered and is of the double lazy back type. The base of the stakes are iron bound and binding chains relieve them of full load strains. Platform dimensions are: 84½ in. back of driver's seat, 60 in. wide and stakes 44 in. high. The body is ironed with heavy bands around the edges of the platform and metal skids on the floor

take the wear of loading and unloading. The price, completely equipped as illustrated, is \$885 f.o.b. Philadelphia. Considerable improvements have been made on all bodies made by the Vim concern and include electric lighting equipment with generator, 6 in. longer wheelbase, non-skid tires on rear wheels and stronger, more flexible and 6 in. longer springs.

AUTOMOTIVE ELECTRIC ASSOCIATION was organized in Atlantic City, N. J., on April 16th, by some of the best known manufacturers of automotive electric accessories. The purpose of the organization is to improve and develop this branch of the business through standardization and by friendly interchange of experience in reference to design and manufacture. The following officers were elected: G. Brewer Griffin, Pittsburgh, Pa., president; C. O. Mininger, president of the Electric Auto-Lite Co., Toledo, O., vice-president; G. S. Cole, secretary Leece-Neville Co., Cleveland, O., secretary, and C. L. Amos, president Dyneto Electric Corp., Syracuse, N. Y., treasurer.

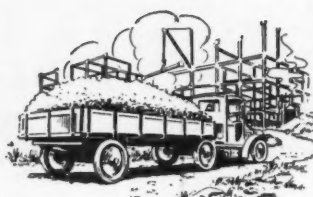


The New Menominee Five-Ton Truck, Model J, Which is Offered at \$4150

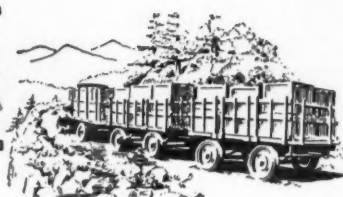
This illustration shows the truck with body raised, affording an excellent view of the new radius-rod equipment which has been added to this job

THE TARIFF ON MOTOR VEHICLES has been lifted by the government of Mexico owing to strong protest made by Mexican automobile dealers. The duty was to have gone into effect on July 1st, imposing an import duty of 60 cents Mexican gold per kilo of 2.20 lb. on motor vehicles. This duty would have meant that a car or truck weighing 1000 lb. would have had to pay an import duty of \$450 Mexican gold, which is about \$225 in American money. Now that the import duty has been entirely lifted, it is expected that a large trade in American trucks will be built up in Mexico.

UNIVERSAL RIM Co., Chicago, has decided to separate the two departments of the business which have heretofore been known as the Royalty and Patent Department and the Wholesale and Manufacturing Department. The Royalty and Patent Department will continue under the name of the Universal Rim Co. It will have charge of all matters pertaining to patents, royalties and licensing of factories to manufacture Baker rims. The wholesale and manufacturing department will be continued under the name of Stone-Thompson Mfg. Co., which takes over the entire distribution of Baker demountable rims and the manufacture of the Stone shock absorber, as well as other automobile specialties. The management of this department remains the same as the former wholesale department of the Universal Rim Co.



## TRAILER DEPARTMENT



### This Trailer Useful in City Garden Work

A combination of casual circumstances led to a formation of the Buffalo Humus Co. whose business is that of providing good garden soil for home gardens that require aid of this nature. In the first place a real estate concern announced that a tract of land in an outlying district of the city was to be cut into building lots. A grove of trees had long existed on this tract and the successive annual crops of leaves had enriched the soil. The trees, of course, were to be cut down.

Secondly, the entrance of the United States into the war and the resulting campaign for the conservation of food stimulated the usual spring gardening fever.

A Buffalo representative of the Associated Press saw the opportunity and secured from the real estate concern the right to sell the top soil from this large tract, at the corner of Parkside and Hertel Avenues. A newspaper man, who was about to take a position at Washington, had a somewhat worn two-passenger Chevrolet to dispose of, and the A. P. man bought the car at a sacrifice. Then he bought a Rose trailer, which is made in Buffalo. Others wished to go in on the proposition, so the Humus Co. was formed.

There was such a demand for the soil, which sold and still sells, at approximately ten cents a bushel, that it was decided to substitute for the Chevrolet a Stewart 1-ton truck, and this was done, a special body being provided. The capacity of the truck is 1 4-5 cu. yds. and the trailer duplicates this, so that 3 3-5 cu. yds. can be delivered on a trip.

Deliveries are made anywhere in the city and about sixteen trips are made each week day. The only business done outside the city so far by this concern was a shipment

of a carload of the soil about the middle of May to the Wanakah Golf Club, about seventeen miles from Buffalo, for use on the course. Twenty-five loads were put into the freight car.

### A New Three-Ton Unit for the Dodge Car

To utilize the Dodge Bros. engine for commercial purposes, Bishop, McCormick & Bishop, Inc., Brooklyn, N. Y., have designed a unit that converts the Dodge car into a form of tractor said to be capable

The original rear axle is replaced by a standard Torbensen internal gear drive having a rated capacity of one ton and an overload capacity of 50 per cent. A stationary steel member of I-beam section carries the wheels and the load, while the drive is taken through bevel gears, differential, live axle and, finally, through an internal gear drive to drums on the rear wheels. A gear ratio of 8 to 1 is obtained.

The Dodge frame is cut off in front of the rear springs and the 4-in. standard Carnegie channel section steel tractor frame is fitted inside the remainder of the original frame and extends to the gear



A Dodge Car Unit in the Service of the 23rd Infantry of New York  
is Here Shown Drawing an Army Trailer

of handling a two-wheel semi-trailer with a 3-ton load. The rear axle gear ratio gives approximately the same operating conditions under high gear as is obtained when the unconverted Dodge car is running under second gear. A speed of 15 m.p.h. is said to be possible without excessive speeding up of the engine and with no cooling or lubricating system trouble.

box support. It is riveted and reinforced throughout. The complete tractor has a wheelbase of 110 in., and the brackets, spring hangers and other members are carried by the frame. The springs have ten triple, heat-treated silica steel leaves, 4 in. wide. The hangers are of manganese bronze. A propeller shaft of 2 1/2-in. seamless steel tubing, fitted with two Spicer universal joints, is provided to withstand the hard pull of the engine. A Martin rocking fifth wheel supports the front end of the trailer and permits movement in any direction, thus preventing any twisting strain on either the tractor or the trailer.

This new tractor unit for the Dodge car is being marketed by Bishop, McCormick & Bishop for \$1315 each.



Truck and Trailer Delivering Good Soil to Needy Buffalo Gardens

THE ITALIAN GOVERNMENT has arranged with a concern to conduct an aerial mail service between Rome and Turin. This will be the first aerial mail service in the world. A five-cent stamp will be fixed to all letters sent in this way, and the envelope must be marked "by aeroplane."



# LOOK FOR THE BIG GROOVED TIRE

**T**RUCK OWNERS, watch, as you pass along the street, for the truck tires with the big, broad, deep tread and the grooves. They're the Firestone Giant Truck Tires. They're the heavy duty truck tires in all classes of work. Built in following sizes: 7, 8, 10, 12 and 14 inches. That thick, wide tread cushions the truck and produces surprising mileage. The flutes or grooves grip the road, stop skidding and spinning regardless of season or road condition. They save gasoline, eliminate accidents and insure uniform wear. Ask the Firestone man to tell you what Firestone Giant Tires will do on your trucks. He has a Firestone for every road, load and condition of service.

**FIRESTONE TIRE & RUBBER COMPANY**  
Akron, Ohio

Branches and Dealers Everywhere



# Firestone

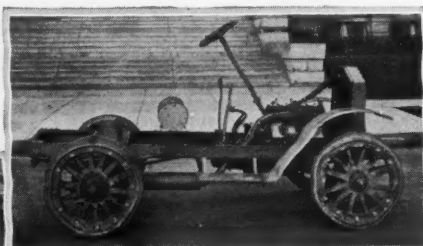
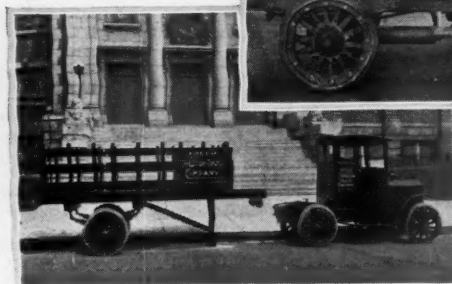
## Giant Truck Tires.

## The Lapeer Tractor-Truck

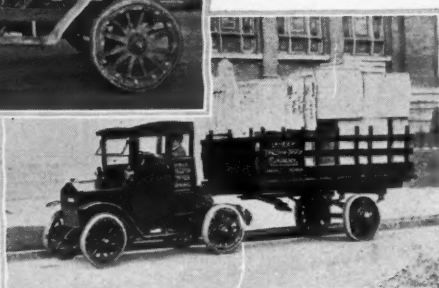
**T**HE Lapeer tractor truck, manufactured by the Lapeer Tractor Truck Co., Lapeer, Mich., operates on the principle that a greater weight can be pulled than carried, which has been found economical in transportation. This tractor truck consists of two separate units, the tractor that does the hauling and the trailer that carries the load. With one trailer the 5-ton Lapeer tractor truck has the very small average weight of

### Lapeer Tractor-Truck Outfit

The upper illustration shows the truck chassis, which has 90 in. wheelbase and a Waukesha  $3\frac{1}{2} \times 5\frac{1}{4}$  in.



engine. The lower views show the trailer attached and detached. Detached, it is held in a level position by an attached supporting arm.



3500 lb. Standard equipment does not include a body on the trailer. The standard chassis is designed to take a 12 x 6 ft. body. The fifth wheel construction is the outstanding feature on these trucks. By means of rollers on the front of the trailer and tracks on the rear of the tractor, the trailer may be picked up or disconnected with but very little manual effort on the part of the operator. The trailer is regularly fitted with a leg which supports it in a level position when disconnected from the tractor. Springs are employed in connection with the fifth wheel and take up the stress and strain of starting and stopping. They, however, do not carry any of the load, as this is borne entirely by the track on the rear end of the tractor.

To obtain the greatest efficiency from motor transportation it is important that equipment be kept moving as much as possible. With the Lapeer tractor truck several trailers may be used and the tractor kept in action practically all the time.

With the Lapeer, only one size tractor is needed for any load and the trailer only being made heavier as required. This combination is very easily handled. It can be turned around in its own length, and can turn sharp corners in crowded streets or be backed against a curb with the tractor at right angles, taking up but little room.

The tractor has a very comfortable cab which affords entire protection to the driver. It has a ventilating rain vision windshield. The window in the doors may be lowered into the doors and those at the sides and back may be lowered into the body, making it cool and comfortable in summer. The doors may be removed in a few moments if desired.

Engine—Waukesha, 4-cylinder,  $3\frac{1}{2}$ -in. bore x  $5\frac{1}{4}$  in. stroke. Separate head, Three point suspension. Cylinders cast in block.

Lubrication—Pump and splash.

Cooling—Centrifugal pump, radiator and fan.

Clutch—Multiple disc, dry plate.

Transmission—Unit power plant type. Selective sliding. Three speeds forward, one reverse.

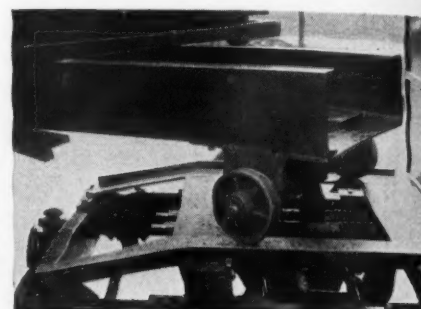
Propeller Shaft—Two universal joints.

Steering—Left hand side. Irreversible type. 18-in. wheel. Gas control on wheel. Accelerator pedal on foot board.

Frame—5-in. channel steel.

Weight—3050 lb.; wheelbase, 90 in.

The Lapeer Co., which is entirely financed by Lapeer, Mich., capital, has the following officers: W. H. Tucker, president;



### The Fifth-Wheel Construction on the Lapeer Tractor-Truck

Springs are employed in connection with the fifth wheel and take up the stress and strain of starting and stopping.

E. T. White, vice-president; E. E. Mix, secretary, and R. T. Carpenter, treasurer.

Unless difficulty is encountered in securing materials this concern expects to produce a minimum of 300 outfits during the next year.

Rear Axle—Torbensen internal gear.—Weight carried on I-beam dead axle. Roller bearings throughout. All gears and bearings fully enclosed and run in oil.

Front Axle—I-beam, drop forged, roller bearings throughout.

Brakes—Rear wheels. Service, contracting. Emergency, expanding.

Wheels—Wood, fronts, both sizes, 34-in. x 4-in.; rears, 2-3 ton 34-in. x 5-in,  $3\frac{1}{2}$ -5 ton 34-in. x 6-in. Tires solid.

Ignition—High tension magneto. Fixed spark.

THE BEARING SERVICE Co., Detroit, has opened new branches in charge of the following men: Pittsburgh, C. M. Fox; St. Louis, Mo., C. R. Jones; Omaha, Neb., W. C. L. Hodgson; Portland, Ore., R. L. Cross; New Orleans, W. R. Herring, and Toronto, A. W. Robbins, Jr. This makes 22 branches that have been opened by the company.



### Plowed Ground Has No Terrors for F-W-D Truck

The illustration shows a three-ton F-W-D truck with a three-ton trailer, hauling beans direct from the field. A Four-Wheel Drive in service of this sort will make at least three trips while the horse-drawn truck is making one, and will haul two to three, or even four times the load that a horse-drawn truck will carry. This three-ton truck, with a trailer, has repeatedly hauled seven tons of cargo from the soft field to the warehouse, a distance of a mile and a half, and accomplished four times as much as the ten-horse team that formerly was used. The owners of this particular truck contend that it is an ordinary task for this F-W-D, operating between the field and the warehouse, to haul fifty tons of beans a day. It is made by the Four-Wheel Drive Auto Company, of Clintonville, Wisconsin.

Everybody who is anybody in the truck industry reads the CCJ



# SIGNAL



## For Constructive Business

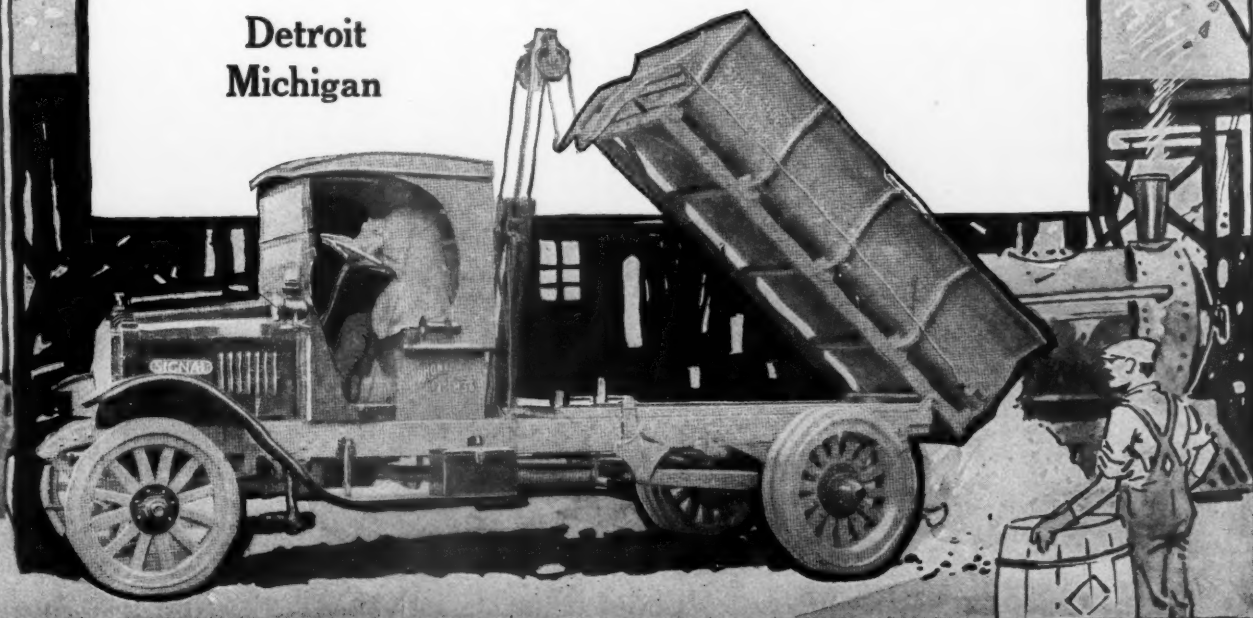
Whether you are a motor truck dealer or user you will find SIGNAL trucks "on the job" for you—delivering a maximum output in sales and haulage.

Facts that show SIGNAL service records on a dollars and sense basis will prove our claims for SIGNAL superiority better than mere talk.

Let us show you what other concerns in your line of business have done in adopting SIGNAL trucks as their means of delivering the goods.

**SIGNAL MOTOR TRUCK CO.**

**Detroit  
Michigan**



## A Trailer Equipped With an Elevating Coal Body

An elevating steel coal body, which is novel in that it is raised and lowered by means of a special small gasoline engine, mounted on the trailer frame, is announced by the Troy Wagon Works Co., Troy, Ohio. The outfit is in a unit, as the body can be raised and lowered without assistance from the truck that hauls it.

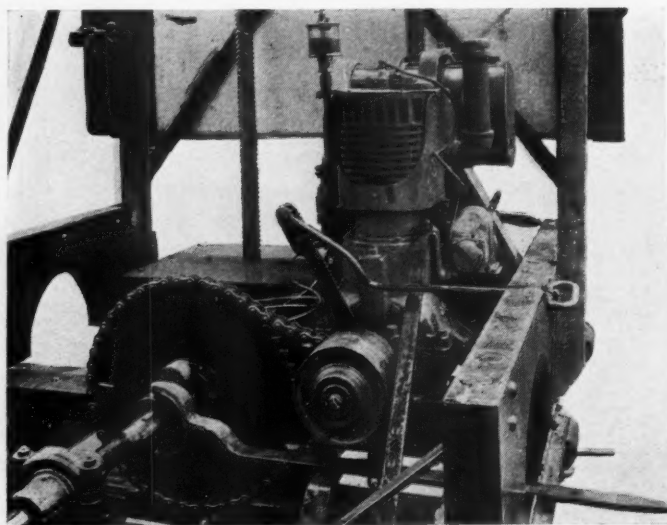
In the past there have been several designs of elevating trailer bodies which were raised and lowered by the aid of either hydraulic, pneumatic or mechanical means, but these have required that the truck remain connected up with the trailer in order that the power might be transferred from one part of the outfit to the other.

The design and details of the unit illustrated were originated and worked out by C. H. Quereaux, manager of the Troy Trailer Sales Co., New York City. The trailer on which the body is mounted is a 5-ton reversible type as manufactured by the Troy concern and will be used behind a 5-ton Packard truck owned by the C. W. Munson Farm at Roslyn, Long Island, N. Y.

The body, made by the Thomas Wright Co., Jersey City, N. J., is elevated by means of four screw hoists, two at each end of the body. These screws are revolved at the same speed by means of suitable gearing and a longitudinal shaft extending from one end to the other. The one-cylinder gasoline engine drives the longitudinal shaft through a chain-and-sprocket system. The engine is of the New Way air-cooled type and is rated at 4 h.p.

The body may be elevated for the full height of 7 ft. off the trailer frame and in this position it is easy to chute the coal from special pockets on each side of the bottom of the body to almost any desired location.

The body is perpendicular on each side, but the ends are tapered from the top toward the bottom to provide for the flow of coal by gravity. The air-cooled gasoline engine is mounted on one end of the trailer frame without interference with the body, due to its shortened length at the bottom.

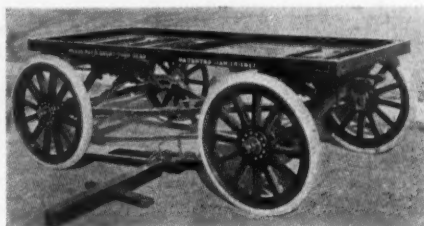


The New-Way Air-Cooled Engine Employed to Raise the Body on the Self-Contained Trailer

The conventional steel chutes of the telescopic type are pushed together and carried on hooks on the front end of the body framework.

## The Hesse Line of Trailers

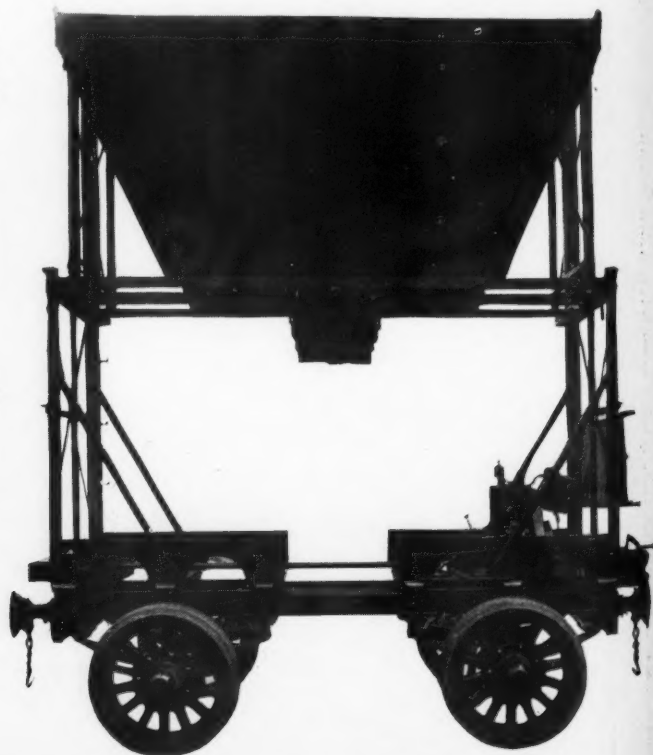
The William G. Hesse & Son Mfg. Co., Leavenworth, Kansas, is producing three types of trailers, the 4-wheel, 2-wheel and semi-trailer. The Hesse trailer is of the



The Hesse Trailer Chassis No. 9

improved style of chassis construction and is built on the patented Hesse Ludlow spring suspension with a 4-wheel steering device and a shock-absorbing draw bar connection for attaching the trailer to a truck. The springs are attached to the axle by a shackle and hanger, which oscillate when the load is applied and when running over uneven ground. This also adds to the life of the wheels, tires and, in fact, the entire trailer. With this construction the weight is carried at the collar or the strongest point of the axle. The patented steering device, which is used on the 4-wheel models, insures the four wheels of the trailer follow the tracks of the rear wheels of the truck perfectly at all times. The light models, 2 and 4-wheel types, are suitable for any kind of business requiring the hauling of merchandise. They can be operated in connection with a truck or pleasure car with only slight additional cost.

The Body Elevated to Its Fullest Extent, Seven Feet Above the Trailer Frame



The heavy models, Nos. 6, 7, 8 and 9, are built with chassis only, but can be furnished with any style of body. These models are being used with stake bodies, wing bodies, dump bodies, etc., for hauling all kinds of merchandise. The axles, springs, shackles, hangers, frame and forgings are of high quality steel. Bower roller bearings are used as are artillery type wheels and a standard make of rubber tires.

Specifications of the heavy duty trailer, No. 9, which is illustrated, are as follows: Capacity—2000 lb.

Axles—Rectangular section, special heat-treated.

Bearings—Bower roller.

Wheels—Artillery type, 1 9-16 in. spokes.

Tires—30 x 2½ in. solid rubber.

Chassis—3-in. channel, gusseted and riveted; length, 8 ft.; width, 42 in.; 9 cross sections; height to top of frame, 32 in.

Springs—1¾-in., special Hesse Ludlow, oil tempered and heat-treated.

Tread—56 in.

Weight—Estimated 875 lb.

ROGERS BROS. Co., Inc., 50 E. 42nd St., New York City, has been formed by Harry Lauterbach and George E. Faile, who have been associated with the automobile industry for many years. They have taken over the entire exportation and practically all of the eastern territory for the sale of Rogers Bros. all steel trailers, manufactured by Rogers Bros. Co., of Albion, Pa., who for many years have enjoyed a national reputation as bridge construction engineers and manufacturers.

The new company will be in very close touch with the Albion, Pa., company of practically the same name and will handle all their export business beside that in southern New York, all of Connecticut, New Jersey, eastern Pennsylvania, Maryland and Delaware.





**ROSS  
GEARS**

**T**HIS CONTENTED DRIVER is only one of *sixty thousand* who go to their homes at night with light hearts and with untired muscles because the trucks that they drive are equipped with Ross Gears. With Ross Steering Gear, even the heaviest truck is surprisingly easy to control, and Ross quality in materials and workmanship gives an added assurance of safety and reliability. *Contented drivers* are one reason why Ross Gears are

*The Steering Gears that Predominate on Motor Trucks*

In view of the fact that one hundred and fifteen motor truck manufacturers, representing considerably over half the industry, are now using them as standard equipment, every man who buys a truck and every manufacturer owes it to himself to investigate and to demand the superior service guaranteed by Ross Steering Gears.

*Write for Catalog and any Special Information desired*

**ROSS GEAR & TOOL COMPANY**  
760 Heath Street      Lafayette, Indiana

## The Hood Tractor in the Lumber Industry

The Hood tractor, Model B, is specially suited for work in the lumber field. It is replacing the horse in numerous lumber camps on account of its greater working capacity and the relatively small cost of maintenance and operation. This tractor is said to make from four to five trips to a horse's one in short hauling, and to completely outdistance the horse in long distance hauling. The unit is balanced and weighted to obtain efficient traction.

When trailers and two-wheeled dollies are used the Hood tractor is capable of pulling a very heavy load, amounting at times to 90,000 lb. The wide range of service obtained through this tractor and the decreased cost of operation are among the advantages claimed for it by the manufacturer, the Hood Mfg. Co., 208 American Bank Bldg., Seattle, Wash.



The Hood Tractor, Model B, Used for Hauling Lumber and in Various Other Activities Around a Lumber Mill.

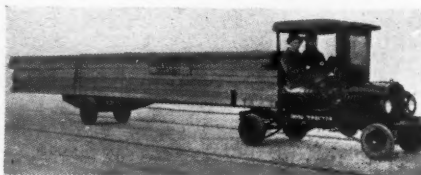
The frame is heavy, 4-in. channel steel, 9 ft. 4 in. long and 23 in. wide. The rear axle is 2 in. diam. and supplied with SKF bearings. The side springs are semi-elliptic, 2 in. wide and 32 in. long, with seven leaves. The front springs are also semi-elliptic, 1 3/4 in. wide and 29 in. long, with six leaves. Solid cast iron wheels are furnished in various sizes for different tire equipments. The drive chains are 5/8 in. wide with 5/8-in. rollers and 1-in. pitch.

The engine is geared to develop 40 h.p. on the rear wheels, the gear ratio on the sprockets of the standard equipment being 2.11 to 1. The expanding emergency brake and service brake have 8-in. drums and 2 1/2-in. shoes. The steering arms are specially designed to permit operation on narrow trams. The front tread is 41 in., the rear tread 47 in. and the wheelbase 89 in.

A special cooling system is furnished for tractor work, providing 3 gal. of extra water designed to maintain constant circulation and prevent overheating. The bolster on the rear is fitted with a cable drum and ratchet. It is a beam 1 in. thick, 5 in. wide and 48 in. standard length. This arrangement is said to prevent the loads from working loose and a cable, 3/8 in. diam. and 15 ft. long, adds to the security of the load.

A towing chain is fitted to a roller and operated with a crank and ratchet. It is a special steel loading chain with 1/4-in. links

and is 35 ft. long. A 4-in. channel steel bumper and a radiator guard protect the front end. Front torsion rods relieve the engine and transmission from strains and shocks, and hold the front axle rigid. The pusher plate is boiler steel, 3/8 in. thick, 32 in. wide and 36 in. high. An M. & S. dif-



The Hood Tractor Used in City Delivery With the Aid of a Two-Wheeled Dolly

ferential is used. A Bronson distillate burning equipment is furnished at an extra cost.

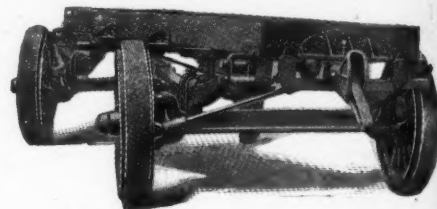
The weight of the Hood tractor is 2800 lb. and the price is \$975, f.o.b. Seattle.

## Arcadia Trailers

The Arcadia Trailer Corp. is manufacturing a number of types of freight carrying trailers for towing behind trucks and pleasure cars. The pleasure car type is built in sizes of 800-lb. and 1500-lb. load capacity and is a two-wheel trailer.

The heavy-duty, four-wheel type is built in 2-ton, 3 1/2-ton and 5-ton capacity sizes. This type is for heavier work behind trucks and tractors. The fact that the pulling power of the power plant is greater than the carrying power makes the trailer a valuable addition to the business world.

The four-wheel trailer is equipped with drop forged axles, full roller bearings, four truck type springs 50 in. long, 3 in. wide,



One of the Arcadia Four-Wheel Trailers Without the Body

with 12 leaves and bronze bushed bearings; artillery type wheels, 36 in. diam., the size and number of the spokes varying with the capacity of the trailer; solid rubber tires of the pressed-on type with a diameter proportioned to the capacity; a heavy channel steel frame 14 ft. long, width and depth varying, with two channel steel cross-members, heavily riveted; two specially designed shock absorbing draw-bars and couplings, one on each end attached to the frame. The body will be built according to requirements and the trailer is given three coats of army gray paint and one of varnish. Optional colors will be given at a slight increased cost. Lettering will be done at cost if desired.

These trailers steer from either or both ends by reason of specially designed steering gear. They are being offered by the Arcadia Trailer Corp., Newark, N. J. The prices are subject to change at any time, but the most recent will be willingly furnished by the maker upon request.

STANDARD ROLLER BEARING CO., of Philadelphia, has opened a branch house of the service sales department at 163 Massachusetts Avenue, Boston, to take care of New England territory. It is under the management of Jos. R. MacCollum.

RUSSIA HAS A 1200-mile transport route between Petrograd and Archangel; a month is required for the trip and 20 trucks start each day from each end of the line. In this way many Russian railroad difficulties are being solved.



The Columbia Six-Ton Trailer Combination

This combination is composed of the two-ton Columbia truck of 118 in. wheelbase, using a 4 1/2 x 5 1/4 in. engine, Covert transmission, Spicer joints, Russel internal-gear axle and Monarch governor. The trailer is built on a framework of 6 in. No. 8 channel steel, with six cross members. Frames are fastened to extra heavy channel, and the 2 1/2 in. solid axle, fitted with roller bearings, 6 in. solid tires and 36 in. wheels with 3 1/2 in. spokes. This trailer with fifth wheel, body and stakes complete, with the tractor, lists at \$2700.



# United States Tires 'Solid Truck'



## Truck Tire Service

is the difference between popular truck tires and those that won't sell.

Also, "popular truck tires"—the kind that sell quickly and often—is another way of saying truck tire profits.

Therefore, good business demands that you will only stock popular truck tires—those that are known for their service.

—United States Truck Tires  
—the *GOOD* Truck Tires

Order them today.

**United States Tire Company**

1790 BROADWAY, NEW YORK

United States Tires  
Are Good Tires

## The Biggam Trailer Corporation Now in Operation

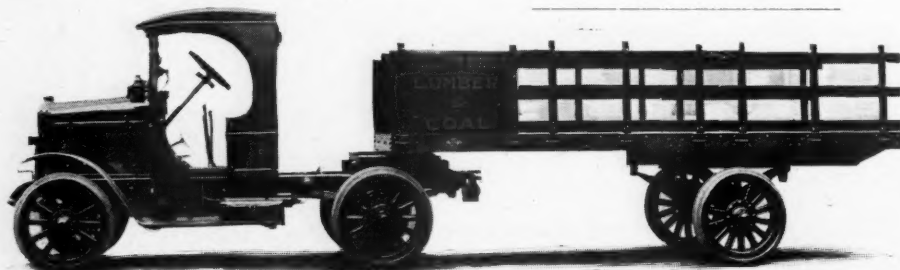
The Biggam Trailer Corp., Corunna, Mich., has started production of its heavy duty trailers and President H. F. Biggam stated a large order was on hand with which to start and that production and the number of employees would depend entirely on ability to secure material.

Referring to a convention of the Good Roads Association, of Michigan, he recalled the main topics of practically all of the speakers, which were good roads and the failure of railroads to meet the transportation demands of the nation. The natural solution hinted at, of the latter problem, was the combined use of truck and trailers. In connection with road improvements was mentioned the planned concrete road between New York City and Philadelphia.

The Biggam products are trailers of the heavy duty type, its line covering reversi-

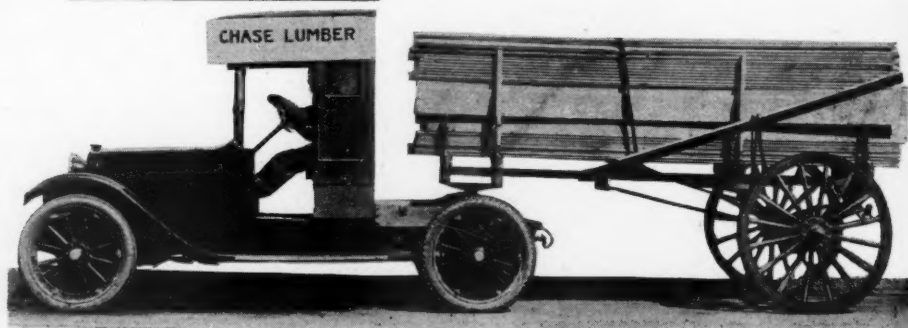
ble trailers which can be run in trains the same as freight cars, having carrying capacities from 2 to 7½ tons and semi-trailers for use with both trucks and trailers, having carrying capacities from 1 to 12 tons.

BIGGAM TRAILER CORP., Detroit, Mich., has purchased a large plant at Corunna, Mich., having Grand Trunk and Ann Arbor sidings on the property, 10 acres of ground, nearly 80,000 sq. ft. of floor space, mill construction brick buildings equipped with two 150 h.p. steam plants, two electric light plants, and late types of machinery. The company will have a capacity for 200 heavy duty trailers per week, including bodies, and is now taking contracts for all kinds of commercial bodies in addition to its regular line. The main office of the company as well as the factory will be located at Corunna.



## Transforming the Used Touring Car Into a Profit-Producing Unit

Conservation of resources is a subject taking precedence over all others in the minds of thinking Americans today. The Martin Rocking Fifth Wheel Company, of Springfield, Mass., advances the idea that if the hundreds of thousands of used cars which are cluttering up the garages of the country were put into service as tractors, using the present horse-drawn wagons, where they are in dire need of them at this time. The illustration shows a 1915 Dodge touring car transformed into a tractor by having the tonneau removed, a driver's cab placed on the frame, and coupled with a Martin Rocking Fifth Wheel to a lumber wagon. This outfit is averaging over five thousand pounds of lumber at one time.



## The Hewitt-Ludlow Tractor-Truck, Hauling a United States Seven-Inch Gun

The above combination is said to have negotiated all the steep hills of San Francisco on second speed, while on the level or ordinary grade, the big gun was hauled with comparative ease. In certain military zones this type of tractor would be very helpful, but it cannot even be expected to traverse soft ground and ditches.

The dash is made of steel and the radiator is mounted on separate springs that cushion it. A Buda engine, Cotta transmission and Lavine irreversible steering gear are standard parts. This tractor-truck is equipped to run on either gasoline or distillate and can be utilized for hauling semi-trailers of eight tons capacity.

## Knox Traction Unit Offered in Three Capacities

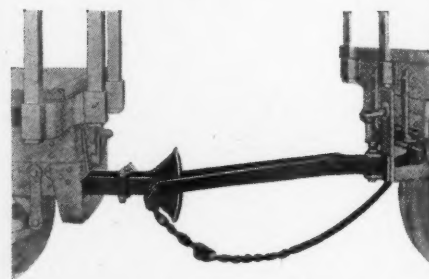
The traction unit of the Knox Motors Associates, Springfield, Mass., is now being made in three different capacities. A 2-ton unit sells for \$390, a 3-ton unit costs \$570 and a 5-ton unit is being offered for \$750.

The detailed construction of this unit was described in the February, 1917, issue, page 300. At that time it was offered as a 2-3-ton unit, the price of which was \$550.

THE CADILLAC MOTOR CAR CO., Hudson Motor Car Co., Ford Motor Co., Studebaker Corp., Continental Motors Corp., Chalmers Motor Car Co. and the Northway Motors Co. will each select certain mechanics from their organizations to help the Government in its plan to send expert mechanics for a course of extensive training in the airplane factories of France.

## New Acason Short-Wheelbase Truck

Shown fitted with a Fruehauf trailer, made by the Fruehauf Trailer Company, of Detroit. The Acason Motor Truck Company, of Detroit, on account of the large engine and four-speed transmission in its two-ton model, has been manufacturing this model with a short wheelbase, making it adaptable for use in connection with a two-wheeled trailer, which is popular with lumber dealers.



## Universal Hitch for Troy Trailers

This type of hitch is an essential feature to correct trailer operation. It is designed so that the relative movement of the trailer, with respect to the truck, is taken care of without putting damaging stress on any of its connections. Uneven ground may be negotiated, the truck or trailer may drop into a rut or hole, the trailer may twist, and sharp curves may be made. In fact, practically all conditions are taken care of within a very wide range.

The parts of this hitch are carefully machined to gauge, and it is claimed nowhere is there more than ¼ in. clearance. This does away with clatter and lost motion. This hitch is attached to the rear end of the truck frame by four bolts. The price is \$15, and the maker is the Troy Trailer Sales Company, Incorporated, Troy, Ohio.

"A little knowledge is a dangerous thing." The CCJ keeps you fully posted





# Smith Wheels Everlasting

## SMITH WHEELS SAVE YOU MONEY!

\$200 to \$500 a Year on Each Truck of 1½ Tons Capacity and Upwards

Tire Mileage Increased! Gasoline Mileage Increased! Truck Life Increased!

*Smith Wheels Guaranteed DURING LIFE OF TRUCK on which originally placed*

INSIST ON "SMITH WHEELS" ON THE NEXT TRUCK YOU BUY!

SMITH WHEEL INC., SYRACUSE, N. Y., U. S. A.

# IT COMES DOWN TO THIS —

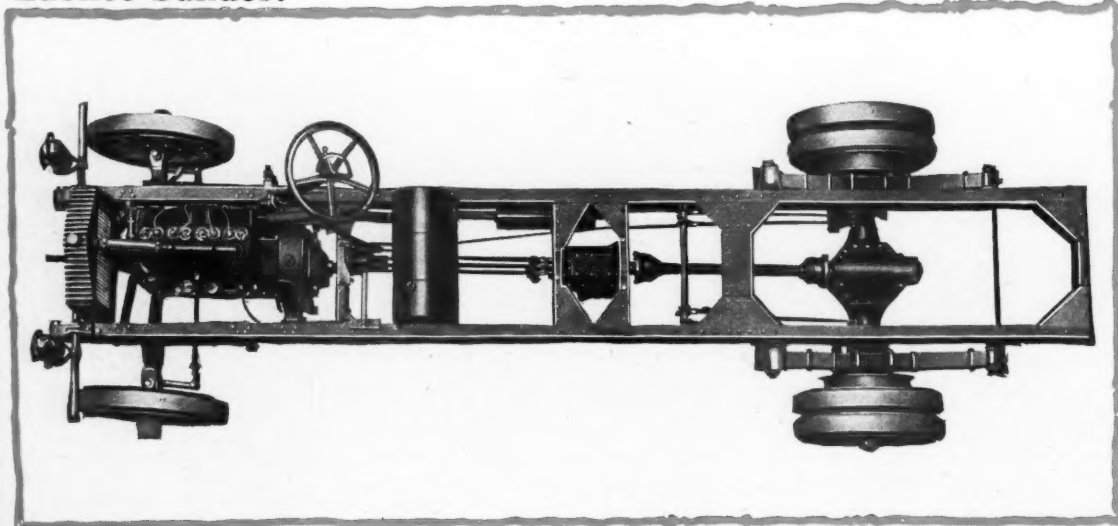
**T**HE only sort of motor truck you can afford to handle is the sort that you yourself know to be a dependable on-the-job service giver.

And you know this about the Sanford Motor Truck because you know the reputations of the men who have designed and built this product of seven years of truck experience.

## SANFORD MOTOR TRUCKS

The Sanford is not "just another motor truck," a hastily assembled collection of other trucks' good points—it is a distinctive advance in the field of motor-truck construction. To the smallest detail its specifications have been perfected and its exclusive features lift it at once out of the class of ordinary trucks.

For you, who will handle Sanford Motor Trucks, this means that you are selling a product that by its very nature is a confidence builder.





# TO SELL SANFORDS IS TO SELL SATISFACTION

The Sanford dealer can devote all his time to making a generous profit for himself because there is an organization back of him at work for his benefit. *Deliveries are assured. The Sanford line is complete. The Sanford principles are sound.*

What picked men, what money and high-grade materials can do has been done in the making of

## SANFORD MOTOR TRUCKS

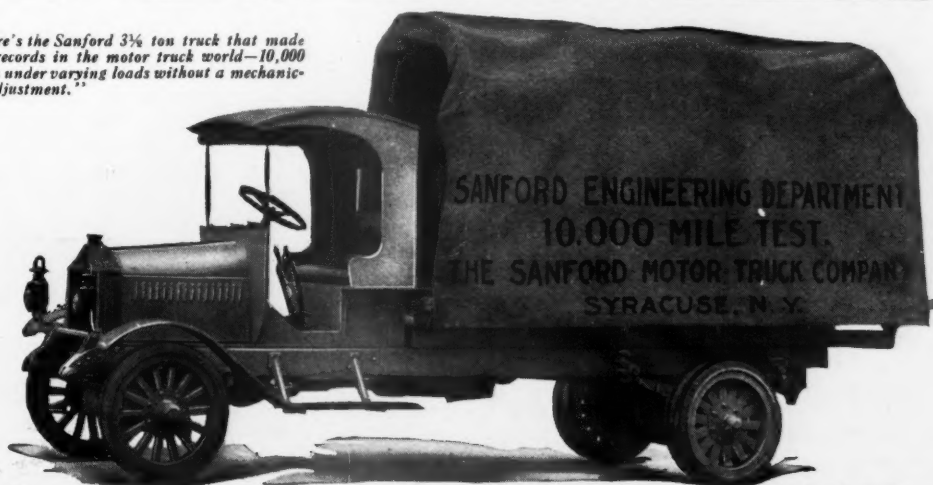
Now it's up to you far-sighted dealers to tie up to this bound-to-win proposition and make for yourselves profits and satisfied customers. You can do it, because once you are familiar with the outstanding superiorities of the Sanford Truck, your enthusiasm will be as great as ours.

Send for our plan—now. Look over the Sanford Truck Specifications. Find out our generous policy of protection for your territory.

2½ ton, 3½ ton, 5 ton Worm Drive  
1 ton and 2 ton Internal Gear Drive

**SANFORD MOTOR TRUCK CO., 102 St. Marks Ave., Syracuse, N. Y.**

*"Here's the Sanford 3½ ton truck that made new records in the motor truck world—10,000 miles under varying loads without a mechanical adjustment."*



# The Horse and the Food Crisis

## The Advantages of Motor Vehicles Accentuated

By A. JACKSON MARSHALL, Secretary  
Electric Vehicle Section, N. E. L. A.

**I**N VIEW of the apparent food crisis as evidenced not only by the almost prohibitive cost, but also by the scarcity of nearly all foodstuffs, the following, including excerpts from an article by Herbert N. Casson, is of timely interest.

A very few years ago the horse industry was one of the greatest industries in the country because of the close relationship it bore to successful and economical agricultural production as well as to the various transportation problems. Since the advent of the commercial car and tractor a revolution has gradually been taking place in the cities and on the farms of the United States. The horse has become unprofitable as he is too costly to buy and too costly to keep. As Edison has said, a horse is the poorest motor ever built. He eats twelve thousand pounds of food a year, the output of five acres, and yet he is only two per cent. efficient. A recent government report shows that a farm horse averages only three and one-half hours of work per day and requires at least three thousand cubic feet of space for himself and his feed. In 1915, according to J. Arthur Bell, of the Bureau of Animal Industry, there were about 24 million horses in the United States, which consumed over two billion dollars' worth of hay and grain each year. The land devoted to the production of food for these horses would furnish food for a greater population than exists at present in this country—approximately 125,000,000.

### Horse Maintenance Items Large

There are other items which definitely disprove the horse as an economic asset to our nation. There is an enormous amount of labor devoted to the care and upkeep of horses which must be considered. For the ten million horses used in our cities, thousands of stables and street cleaners must be employed to maintain sanitary conditions, an item of approximately \$10 per horse per year. In addition the tremendous amount of labor expended in hay making, corn growing and the labor of mechanics who make horse feed machinery, mowers, tedders, feed grinders, etc., is conservatively estimated at \$50 per horse per year. It is said that the iron hammered by blacksmiths into horse shoes in one year is sufficient to make 40,000 farm tractors or 60,000 motor trucks.

Waldemar Kaempffert says: "Charge it to the horse if you have to pay more than ever for your shoes. About one hundred and thirty million dollars' worth of leather must be fashioned into harness every year. Abolish the horse and New York could clean its streets at an expense of only ten million dollars a year instead of fifty million dollars. If all the horseshoers, stable builders, hostlers, street sweepers, harness makers, hay balers and whip makers, a vast army of thirteen million horse slaves,

were released from horse bondage and engaged in ministering directly to human wants, who knows but we would hear less of strikes for higher wages to meet the increased cost of food?"

Aside from the economics of the food crisis, horses will probably have to be replaced by motor vehicles, since the war requirements are to be so great. For an army of 2,000,000 men we shall need 416,000 horses and mules. An average of 33,000 horses per month have been exported for the Allies since the beginning of the war, and eleven thousand a month will be needed to keep our flag advancing as fast as the others. These figures give some idea of the vast numbers of horses which must be available and makes one realize the necessity of acquiring some other means of transportation in many lines of work.

In an interesting article Harry Wilkins Perry, of the National Automobile Chamber of Commerce, says that if the work horses in the country were displaced by farm tractors and motor trucks, as passenger automobiles have largely displaced the pleasure horse or family carriage horse, the wheat yield of the country could be increased 50 per cent., or the corn crop doubled. There are in the country 4,100,000 farms of fifty acres or more in extent, which could use motor tractors with economy. A census taken last February shows that not more than 34,371 farm tractors will be used in the United States this season, so it is evident that there is a great opportunity here for the American farmer to increase his efficiency. With the big farm tractors that are used on the immense farms of the West, one tractor can plow, double-disk and seed twenty-five acres a day, accomplishing the work of one man and a team for two weeks, and the same tractor can be used later for harvesting, threshing and moving the crop to market.

The farmer, the merchant and the manufacturer can all perform a patriotic duty by making a more extensive use of the time and labor saving motor truck and tractor and at the same time increase their own profits and efficiency.

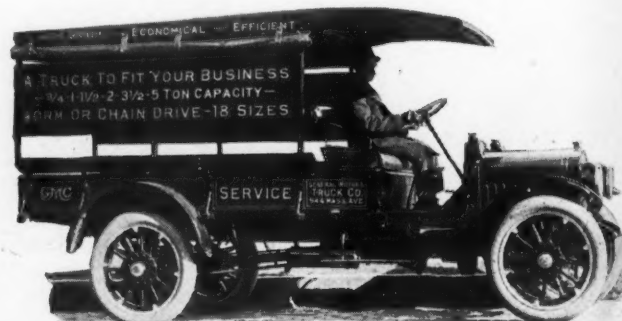
The initial government war requirement of over 70,000 motor trucks and passenger automobiles, as well as 250,000 horses and mules, and the great demand for petroleum, the uses of which have become so many and varied, which tend to lessen the already decreasing supply, and to make the price soar, place the "electric," both as passenger and commercial vehicle, in the foreground as an economic and sturdy means of urban transportation. The electric vehicle lends itself to practically every urban haulage need, giving exceptionally satisfactory service with extremely low operating costs, for although the cost of production has materially advanced, the cost of current has not increased, and the simple mechanism of the "electric" affords the uttermost ease of operation with the minimum of trouble and repairs, and is a worthy successor to the horse. The Electric Vehicle Section, National Electric Light Association, is advised that an electric farm tractor has been built by the agricultural engineering division of the University of California. This tractor is especially intended for cultivating work and has proven that it can be run economically.

To quote Mr. Perry: "If the United States is going to perform the part in the war it has undertaken, it is absolutely essential that there shall be a big increase in agricultural products, that great numbers of ships shall be built, that the production of military goods shall be expanded and, particularly, that every possible means of expediting the transportation of the unprecedented volume of shipments shall be used. All this necessary increase in activity, taken in conjunction with the shortage in man-power, means that more efficient methods must be adopted and that much more labor saving and time saving machinery must be utilized."

ALVAN T. FULLER, who controls the Eastern New England sales for the Packard, has incorporated his business as the Packard Motor Car Co., of Boston, capitalized at \$1,500,000. The officers are Alvan T. Fuller, president; Pitt W. Danforth, treasurer, and Robert B. Parer, secretary and general manager.

### Making the Service Car Advertise

E. M. Brackett, Manager of the GMC truck branch at Boston, says, "Our three-quarter ton GMC service truck does us a great deal of good in an advertising way. It works wherever and whenever it is seen."



All phases of the truck industry covered best in the CCJ





## THE WEST HONORS The ATTERBURY

Orders for nearly sixty Atterburys came from the Pacific coast last month.

These orders were not "try-outs" in an untried territory. Virtually they were "repeats," because the Atterbury had won its spurs in the West through many years of service.

Yes, Atterbury dealers in the far West can sell this Eastern motor-truck with great success and Eastern dealers are doing the same.

Are you an  
Atterbury  
dealer

?

**Atterbury  
Motor Car Co.**  
Buffalo, N. Y.

**ATTERBURY**

## "Business is Good, Thanks"

By **HARTER B. HULL**, Sales Manager of the  
Kratzer Carriage Company, Des Moines, Iowa

**T**HE motor truck industry in this country is today offering business opportunities for dealers never before presented in any line of effort. Factories have perfected products and outputs are enormous, so that even the greatly increased demands of the past few months have not created any marked shortage in the supply of the various models. Truck dealers, as a whole, are faring better from point of deliveries than their brothers in the pleasure car end of the business.

The present war condition should have no curtailing effect on this form of business. There is no occasion for "panicky" retrenchment on the part of the commercial commodity buyers. The plea of all business organizations is to "Keep Business Normal," and this state of mind rigidly maintained on the dealer's part will go far toward allaying fears on the buyer's side. Let no indication of gloom or misgiving for the future be so reflected. There is urgent need of a policy of national thrift, but one which is entirely disassociated from ill-advised economy.

Now, as never before, has the motor truck presented the strong features of actual necessity. Prices of horses and feed are on the constant rise. This past year has seen a high point never before reached, and it is but natural to expect further rises. The Quartermaster's Department of the U. S. Government has already thrown its purchasing net over all sections of the country in order to acquire the thousands of necessary horses and mules needed for active participation of this country in the great war. The dearth of horseflesh in recent years is appalling and the answer is apparent. The great government demand will make the purchase of horses for commercial purposes practically prohibitive. Even the Middle West has felt this condition for months, and the truck sales have been tremendous as a result. Even in the heart of the pasture and feed districts the number of horses used is very small. It is an economical transition made easy by the development to the present high point of efficiency, practicability and low cost, of motor trucks of all sizes and capacities, so that the dealer with a single line, or better, with a diverse range of standard types of trucks, has no longer an uphill fight to make for business—it is seeking him. Both commerce, large and small, and the farm industry are awaiting the live dealers' salesmanship.

There is need yet, of course, for education on the part of the public that they may be made to know the absolute feasibility and economy of the use of motor trucks, and it is up to the truck dealer to load up his sales battery with hauling costs, comparative upkeep figures of truck versus horses, including the elements of feed, space required, time for preparation and an estimate on the mortality or total disability of animals in service, graphs of hauling radii with area comparisons and, most im-

portant of all, the speed and service arguments which can be made to defy all apathy on the buyer's part.

In all the history of pleasure car sales in every city and community, successes have been made with few exceptions as the result of intelligent salesmanship, more than the pre-eminence of any specific line of cars. The evidence of this is the fact that adjacent towns will show a marked contrast in the distribution of the same lines; in one, a live dealer has sold the largest percentage of the make he has handled, and in the other, some rival car has been placed in the lead by an active dealer, with the former line taking a minor place. A trip through various cities will show a similar contrast in motor truck sales. Granted that several lines of trucks have merits on a par, the ratio of sales of any one truck is directly proportional to the constructive, aggressive, intelligent sales effort of the dealer and his sales organiza-

tion. Salesmen should be so thoroughly educated on the merits and distinctive "talking points" of his line, and the definite superior elements over all competing lines, that no stone will be left unturned after the first conference with the customer. The buyer should be ready to see demonstrations with a clear idea of what to look for in the truck under consideration. The word-picture and the figures presented should make the demonstration merely a confirmation of established facts.

To repeat, the motor truck is today offering sales opportunities never before presented by any commodity in the history of the country. The war and its resultant effects on delivery costs under the horse regime are actually making business better. Get the "slack times" bugaboo out of your mind. Let the dealer in city and village go for the 100 per cent. mark in distribution through a sane optimism and intensive effort based on the wealth of facts so readily to be acquired. This combination is bound to win over to motor trucking every business man or farmer who has any need whatsoever for freight or produce hauling or general delivery work.

## The American Opportunity in Russia

Opinion of One Just Returned From That Country

By **HENRY H. WESENER**

[Mr. Wesener, Special Representative for the Firestone Tire and Rubber Company, has just returned from a year's stay in Russia, and sums up in the following, the commercial aspects of the revolution. He witnessed the stirring scenes that brought about the downfall of the Romanoff dynasty just before sailing for America. His sojourn gave him opportunity to make a close study of industrial and political conditions in the troubled nation.—Editor]

Russia today is the "land of opportunity" for American manufacturers, because the Russians admire America and like American goods. Freed of oppression, Russia during the next fifty years will rival America in progress, thus opening up an expert field of vast proportions.

American manufacturers should "get busy" immediately in this new export field, if they are willing to give it the attention it deserves. They should not wait until after the war, because England, France, Sweden and other European countries will have become too firmly entrenched.

The time may come when this country will be compelled to seek larger export fields or else curtail production at home. The latter course means internal disturbances, labor troubles and a general weakening of our commercial system. Larger export fields mean greater prosperity and a greater nation.

Never before was such an opportunity offered as there is in Russia today. Russia is just beginning to awaken after years of oppression. Its people have marvelous latent qualities for progress and expansion. It is a country three times as large as the United States, has vast natural resources, such as coal, iron, lumber, pe-

troleum, etc. Eighty per cent. of its population of 175,000,000 people are engaged in agricultural or kindred pursuits. The country offers marvelous opportunities for development along transportation and industrial lines.

Also to be emphasized is the importance of liberal investments in entering the export field. American exporters have been impatient to realize quick returns and have made only small investments.

**REDDEN MOTOR TRUCK CO., INC.**, has consolidated the New York and Detroit offices with the new Chicago office. Temporary Chicago headquarters have been established at 1442 S. Michigan Ave.

**TITAN MOTORS CO.**, Detroit, has been formed with a capitalization of \$350,000, for the purpose of manufacturing engines. The output is estimated at 5000 engines for the first year of Class A Government specifications. The officers of the company are: C. C. Hinkley, president and general manager; A. A. Gloetzner, vice-president and sales manager; W. A. Fisher, treasurer. The above officers and Fred J. Fisher, Louis Mendelssohn, Chas. Fisher, Aaron Mendelssohn form the directorate. A plant has been acquired at West Fort & 24th Sts., comprising 52,000 sq. ft. of floor space.

Advertising in the CCJ is memory insurance. "Out of sight, out of mind," you know



# Freight Congestion Emphasizes Motor Truck Value\*

Systematic Use, Quick-Loading Devices, Detachable Bodies and Trailers  
Produce Economical Delivery

**A** NET profit of \$30,000 a year is what six motor trucks earn for the owner of a building material and coal yard in the west; and this profit is earned after a depreciation charge of 33 1-3 per cent., interest at 6 per cent. and all operating and repair expenses have been charged. Revenue from the trucks is figured on the ton-mile basis at the rate which would have to be paid if the hauling were let to a hauling contractor.

Back of these large earnings is the system that keeps the trucks actually hauling 20 hours a day. No time or labor is wasted in loading or unloading, and during the four hours in which the trucks are idle, they are thoroughly inspected and put in such good repair that a breakdown during working hours is practically unknown.

Wear and tear is minimized by routing over the best roads. Often the shortest route is not chosen if the longer one will be easier on the truck. A map of the city and vicinity, on which is indicated the kind and condition of all roads and pavements, is the only route board used.

## The Quick-Loading Devices

The biggest single factor in earnings is the quick loading and unloading. All trucks are equipped with power dumps. At first the coal, stone or sand was loaded into the trucks by hand. This took 20 to 25 minutes, and required the labor of four or five shovelers, at a cost of about 18 cents per cubic yard of material. On this basis the trucks earned only 6 per cent. on the investment.

Today, the trucks are loaded from an overhead steel hopper in an average of 60 seconds' time. This hopper is built of steel on a concrete foundation. It is loaded by means of a locomotive crane equipped with a 54-cubic-foot clam shell bucket, as well as by a stiff-leg derrick with the same bucket equipment.

Any loose material such as sand, stone and coal, may be successfully handled in this way. The material handled and the conditions of the business in this case make handling easy, but the principle back of it is fundamental—trucks earn dividends when they are hauling—time wasted in loading or through break-downs is money lost.

Long motor truck hauls have proved particularly effective for many concerns since the car shortage became acute. An interesting example of this occurred recently when a metal working concern completed a rush order of two huge copper stills for a manufacturer of chemicals, only to learn that no freight cars were available. Two of these stills, aggregating five tons in weight, were loaded onto a truck and hauled across country to the chemical plant

in about 12 hours. Since the chemical company needed the stills to help in filling war orders, the motor truck played an important part as a war-time ally.

A Pennsylvania manufacturer uses motor trucks most exclusively for a thirty-mile haul of paper in large rolls. Before he changed from railroad transportation the rolls were frequently damaged when they arrived, but the trucks now deliver them in excellent condition. Each truck hauls about 2000 tons of paper every month, making two round trips daily.

## Supply Truck Reduced Expense

Considerable time was lost, in an eastern public service company, whenever a construction or repair gang found itself without some needed material or tool. The delay attendant upon calling the supply department and waiting for the truck to make a special trip with a single tool was expensive, as was the truck's trip with a light load.

A truck was designed to cut this expense. It carried, in special compartments, a day's supply of practically everything that an outside gang can need. The supply is replenished each night at the warehouse. Loaded in this way, it makes the rounds of the various jobs, and seldom has to go back to the supply department for material or tools. Since it was first put in service the wasted time has materially decreased.

Loading and unloading a number of small items cheaply is often difficult. One concern, whose deliveries of materials go to numerous outside construction gangs, borrowed an idea from a grocery store. Needed materials had had a way of not getting left at the right places, and this had, of course, been expensive to the company. By loading each "order" into a separate box, the errors in delivery have been eliminated.

Another field where the difficulties of loading economically and cheaply are great is in transferring brick from cars or flatboats to trucks. When horse-drawn trucks were used for hauling, the time taken in loading 1500 brick—the average wagon load—was not out of proportion to the time on the road delivering them. The coming of the automobile, with generally almost double the wagon capacity and half the traveling time, at once made this proportion ridiculous.

## Demountable Body Useful

One contractor is escaping the difficulty by using the principle of the demountable body; several different applications of it are in use by his fleet of trucks, for he is still experimenting. The demountable body itself works well, for while the truck delivers one load, another is being prepared. The chief objection is the expensive and elaborate apparatus that is necessary.

The trailer—practically a demountable body on its own wheels—accomplished

much the same thing without the use of any special machinery at all. Dump bodies, moreover, can be fitted without any difficulty to trailers and operated either by hand or by power from the truck ahead.

Skiffs have also been satisfactory. These are individual compartments, cheap low platforms with one high end. The loaders fill them while the truck is away. When it returns it backs up, inclines the body as in dumping, and then quickly hauls the skiffs up the inclined floor by means of its own power winch.

Four skiffs are used with some trucks, eight with others. The body is then returned to the horizontal position. When the load reaches its destination the body again inclines and the skiffs are hauled out by the winch, with no damage to the brick.

## Saves Handling of Merchandise

A plan that does away with one handling, and consequently with the need for several employees, is certainly worth while in these days of labor shortage. That is what an eastern department store has accomplished by having its electric motor trucks load inside the building on the various floors. The freight elevators carry the machines to the desired levels, thus saving completely one handling of merchandise. A consequent increase in delivery speed is also noticeable.

This same store makes a small but material saving in connection with its gasoline delivery equipment through a little plan that was first worked out by the merchandise manager in his private garage. It prevents the loss from tires rotting in oil or the alternative expense of keeping one man at the job of cleaning off the floor most of his time. A foot pit is made directly under where each engine stands. This is filled with coarse sand and gravel.

It does away completely with the oily floor nuisance. When a driver wants to drain his radiator he simply opens the pet cock and lets the water soak into the sand. Whenever the pit becomes too oily, it is refilled with clean sand.

"It used to be our experience that furniture was either delayed in delivery, very often, or in other cases was delivered only at an excessively high cost," says the delivery manager of a large company. "We do a general department store business, and furniture is one of our profitable departments. The reason for the trouble lay in the fact that we usually waited until we had a complete truck load, holding back some deliveries, meanwhile; or, when we did make a special trip without a full load, the cost was excessive.

"We found our remedy in devising a new kind of body for some of our trucks.

\* Reprinted from "Motor Trucks; a War-Time Ally," in the August issue of System.

We divided the new bodies into two sections, front and back, which are separated from each other by a screen. The front section we use for package deliveries, and only the rear section is devoted to furniture.

"The arrangement enables us always to have a full load, thus assuring complete use of the trucks—and besides that, furniture is delivered to our customers just as promptly as any other goods we sell."

Demountable bodies used by one wholesaler who delivers within a radius of 30 miles save him thousands of dollars annually. The bodies are trussed up to the shipping platform and loaded. The truck then backs up under the load, it is dropped on in a few seconds, and the truck is under way again without loss of time.

By this method the concern is able to get along with fewer trucks and fewer drivers than when considerable time was wasted by the ordinary loading plans.

### A Device Facilitating the Unloading of Freight Cars

Evidence of the strenuous efforts of railroad officials to keep cars moving and relieve freight congestion is found in their growing interest in all devices designed for rapid unloading of cars at team tracks and sidings.

Recently a New Jersey contractor, Conrad Sebolt, receiving crushed stone in cars on the P. R. R. at New Brunswick, N. J., purchased a material handling device known as a "Lee Loader" for the rapid transference of stone into his motor truck. It was the first such device in town. J. H. Herron, the freight agent at New Brunswick, after watching the operation of the loader for a short time and noting the speed at which Mr. Sebolt unloaded his stone, became decidedly interested. Learning from the contractor the address of the manufacturer, Mr. Herron wrote for information and catalogues and distributed the latter among all of the contractors, coal dealers and industrial concerns receiving material at the New Brunswick sidings. He also reported the matter in detail to the divisional office so that the information might be handed on to freight agents over the entire Pennsylvania system.

Efforts such as this by officials large and small, of all of our railroads, are what keep freight moving during these strenuous times despite car shortage, war preparations and an unprecedented volume of freight shipments.



The Lee Loader Filling a Trailer Body With Stone

### The Way-Cleanse Sweeper Offers a New Model

This machine is designed to do the same work as the larger or night sweeper built by the Way-Cleanse Co., of Sandusky, Ohio. It differs, however, from the larger machine in that the dirt receptacle and sweeper proper are mounted on four wheels, making a smaller machine which can be operated successfully on crowded thoroughfares during the day. The night sweeper carries the dirt compartment on an extra set of wheels—a sort of trailer arrangement.

Way-Cleanse night sweepers have been in operation in St. Louis, Mo., since June 1, 1916, and according to a report received from the St. Louis office, which covers a

#### The Way-Cleanse Day or Pick-up Sweeper

This machine operates on the same principle as a suction carpet sweeper. All dirt, and especially the fine dust, is drawn up into a dirt receptacle and not blown to the four winds.



period from June 1, 1916, to April 1, 1917, these machines have been in continual operation every night, weather permitting.

The district swept by the Way-Cleanse sweepers covers 140 blocks; the roadway consists of granite blocks, wood blocks and asphalt. There are car tracks on almost all the streets. This district comprises the most congested part of the city, being the wholesale and shopping district.

The average amount of dirt picked up from June 1 to December 1 in this district daily averaged 7 cu. yds. During the winter months this increased to a daily average of 8½ cu. yds. There were 89 nights that the temperature was below freezing when the method of cleaning by rotary brush or flushing could not be used. The Way-Cleanse sweepers cleaned the pavements just as effectively during the cold weather as they did during the warm. This shows the flexibility of the sweepers.

During the 11 months of operation the sweepers picked up and took to the dump under their own power 2152 tons of dirt. The gutter machine picked up about 60 per cent. of the entire amount and this dirt lies within four feet of the curb.

An examination made by Dr. Baldwin, city bacteriologist of St. Louis, for Mr. Talbert, commissioner of streets and sewers, showed that 16 per cent. of the bulk of the dirt picked up is as fine as flour and would pass a 200-mesh screen. This would equal 644 tons of fine flour-like dust, and 40 per cent. of the remaining amount would blow with the slightest current of air. This flour-like dust that cannot be picked up in any other way than by the Way-Cleanse system is the dust that causes the

trouble to pedestrians, housekeepers and store keepers.

No sprinkling has been done in this district since June 15, 1916, and the traffic police stationed in the district swept by the Way-Cleanse sweepers have had no report to make of accidents due to skidding of automobiles. This is due to the fact that this fine dust is removed by the sweepers. Water and fine dust is the cause of the pavements becoming slimy and slippery and excessive skidding results. On June 1 the company sent two machines to Kansas City which have been operating very successfully there ever since. The company employs trained men who are trained at their factory at Sandusky, Ohio, to operate these machines and who are thoroughly familiar with every detail of the machine.

PERLMAN RIM Co. has moved its New York offices to Jackson, Mich., and the machinery belonging to the company that was in the Mott Wheel Works, Utica, N. Y., has also been taken to Jackson.

LOUIS BOND CHERRY, of Kansas City, Mo., has demonstrated to the Government an electro-chemical process for converting kerosene into synthetic gasoline at a cost of less than 1 cent a gallon. He stated that in a test plant, at Coffeyville, Kans., 78 per cent. of kerosene had been converted into a water-like gasoline of sufficiently high quality to run an automobile. He also stated that an electric plant, capable of converting 60,000 gallons of distillate per day had been built and tested at the St. Clair refinery at Coffeyville. As soon as certain experiments are completed he states that he will be able to convert at least 90 per cent. of kerosene into gasoline.



# Marked Success of Motor Truck Transit Company

Both Freight and Passenger Transportation Furnished by Kent Transit Co.

By C. W. SHAFER

**T**HE POSSIBILITIES of the motor truck for freight and passenger transportation are so well illustrated in the operations of the Kent Transit Co., at Grand Rapids, Mich., that the future scope of the commercial car, in these fields, is beyond present comprehension. In maintaining a service to Lowell, a village 23 miles distant, it has been definitely proved that the truck is an out-and-out competitor of steam traffic and is so clearly in demand that the service is, and always will be, highly profitable to the promoters and preeminently satisfactory to the patrons.

The Kent Transit Co. was organized by C. E. Wood and F. F. Burtless. Four Republic trucks of 1½-ton capacity were purchased, two with stake bodies for freight hauling and two with omnibus bodies for passenger transportation. Handbills announcing the innovation were distributed liberally in the territory and a small amount of newspaper advertising was done. Schedules were arranged for a passenger and freight truck to leave the terminals at 7 A. M. daily, each operating over a different road and thus completing a loop trip to take in five hamlets located on an average of four miles apart. Four trips for each passenger car were scheduled daily, although this was later increased to six because of the demand for service. The freight trucks complete four trips each day. A charge of 50 cents one way, and 75 cents, round trip, was made for passengers, and the freight service was furnished in accordance with regular express rates.

On the first day of operation the line more than paid expenses, although but one freight haul of consequence was made.

The passenger buses were filled on all trips. Pickups were made at Ada, McCords, Alto, Cascade and other cross-road settlements, conveying passengers both to Grand Rapids and Lowell. Those who used the buses from the intermediate points had no access to either terminal except by team or machine and in each case the time consumed

hood, during the remainder of the summer and fall, another bus will be added. During the winter it is expected that the traffic will be even heavier. The buses will be electrically heated and lighted and will furnish comfortable transportation. At the same time fewer persons will be making the trips with horse or motor, preferring



Kent Passenger Buses En Route Between Lowell and Grand Rapids

and the expense would have been much more in comparison. From Lowell the only competition came from the Pere Marquette railroad and this, with two trains each way a day, made the buses all the more inviting. Within two weeks the buses became a habit and on many runs the drivers were unable to accommodate all the patrons. In all likeli-

hood, during the remainder of the summer and fall, another bus will be added. During the winter it is expected that the traffic will be even heavier. The buses will be electrically heated and lighted and will furnish comfortable transportation. At the same time fewer persons will be making the trips with horse or motor, preferring

the bus, at a moderate expense, to the trouble and loss of time in getting their own horse or car ready. The passenger trucks are operated after the fashion of a railroad—on a positive schedule for departure and with every effort to make the intermediate and objective points on time. Special dispensations are made at times by the drivers as a matter of accommodation. This is a point in favor of the truck. Tickets are sold at each terminal and these tickets are taken up by the driver. Checks are made nightly on the day's business. No check can be made on the passengers carried to and from the intermediate points, nor of those hauled from an intermediate point to a terminal. In these instances the honesty of the driver is depended upon. At times the owners make a trip over the route, keeping a tab of the pickups and in this way they strike a fair average which is considered when the checking is done. The drivers are paid \$20 weekly, a wage which will be increased as their efficiency and honesty are demonstrated. Later on they will be given an opportunity to purchase a little stock in the company which it is believed will be a further incentive to conscientious dealing with the company. This feature of profit-sharing is certain to produce good results and it will obviate the big temptation of "knocking down" which is



The Two Freight Trucks Operated by the Kent Transit Company, Grand Rapids, Mich.

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so prevalent on certain lines of transportation.

With the freight buses, at present, all loads must be deposited at the terminal depots. No pickups will be made. The promoters feel that the line, in this regard, should be operated the same as a railroad. And the idea has made a decided impression. From the start both trucks were loaded to capacity. The first day two trips were made, accommodating a load of groceries and a load of soft drinks for the intermediate points and terminals. Now every wholesale institution, and many retail institutions, use the line daily. Shipments are made in full truck loads and less than truck loads, some trips accommodating as many as ten business houses. For them the line offers a big opportunity. Not only is the cost of transportation the same but the service is unexcelled and far superior to that of the railroad. By local freight the shipments would not reach the points as quickly, and would necessitate delivery on the far end and a consequent absorption of time which always means a delay. With the truck the delivery is made at the door except at the terminal where it is necessary for the assignee to take possession. For the intermediate points the lines are peerless. Increase of business in several lines in these districts, have already been noted.

The freight business of the Kent Transit Co. has been so good that more trucks will soon be added and the scope of the lines will be extended to all points in Kent county. F. F. Burtless, secretary and treasurer, believes that the volume of business will warrant the establishment of at least ten different routes and the operation of from 30 to 60 trucks. This, in his estimation, is not overdrawn in the least. And he believes that this idea of transportation is going to be adopted in all parts of the country, because it is the only logical method. Within a few months the line will operate pick-up trucks for freight in the city, making the various business houses and then taking the overland trip. With this idea an added cost will be taxed against the shipper to make up for the extra expense which will be guaranteed to him in the cost of operation of his own truck and the use of his own truck, during that time, for other work.

The operation of a single Republic truck in the service of the Kent Transit Co.,

making the trip from Grand Rapids to Lowell and return four times daily, amounts to an average of \$16.50. This includes gasoline, oil, tires, repairs and an allowance for depreciation. Each truck has earned not less than \$30 on any day of operation and the figures of several days were over \$40. An even better profit was shown with the freight trucks, although the expense of operation was from \$1 to \$2 a day more. With these figures the value of the proposition can readily be seen. It means money for the promoters, comfort and a saving for patrons. In other words, summed up, it is ideal transportation both for persons and freight. It plainly demonstrates, according to the promoters, that truck transportation is the coming transportation of the country. It will be the connecting link between city and rural business and will hold them so close that there will be a bigger and better profit for the manufacturer, the jobber, the retailer, the small town merchant and also for the promoter of the line. The establishment of thousands of companies similar to the Kent Transit Co. are real possibilities for the near future. And eventually they will grow to be indispensable institutions.

### The Penn Drop-Bottom Body

**T**HE Pennsylvania Steel Car Co. was organized in March of this year for the purpose of manufacturing the Penn drop bottom truck. This truck is manufactured for carrying all kinds of building material—stone, lime, sand, brick and all other bulk materials used by road builders and contractors.

It is manufactured in Bridesburg, Phila., and the output capacity is said to be from 35 to 50 trucks per month.

The truck is built upon a channel iron frame, which forms part of the body, making it a very strong and durable construction. The differential and jack shaft is set about 8 or 10 in. back of the transmission and this drives the rear wheels by both the shaft and chain driven types. The axles, one on either side of the body, are L-shaped steel forgings that work in a machined casting, fastened securely to the side of the body. The axle is supported by a heavy type of spring secured by a number of braces, fastened to the channel iron frame. This construction allows a perfect-

ly clear space at the bottom of the body for two doors to drop, thus dumping the load in a desired spot; or by opening the doors part way, a load could be distributed along the road for road construction.

The construction of the truck in general is along lines of simplicity and durability. The body is made of different gage sheet steel according to the capacity, from 1 to 7 tons.

The mechanism of raising the doors is by chain and cogs with a hand lever and also by a mechanical power appliance connected on the propeller shaft.

Wheels are of heavy wood or steel type as desired, with different sized tires according to carrying capacity.

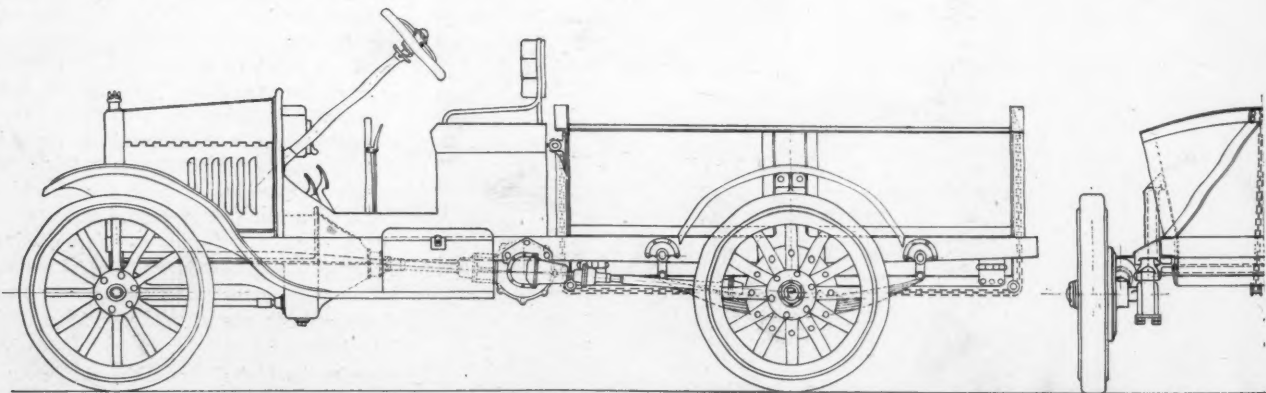
A feature of the Penn truck is that the doors can be dropped quickly while the car is in motion, and also raised quickly while the car is still in motion. This is a special good quality in dumping places where the ground might allow the wheels to sink and the driver would find it difficult to release the truck.

The Penna. Steel Car Co. can attach their dumping body to any standard chassis of motor truck. They have under construction now a one-ton body mounted on a Ford standard chassis, which will carry 1 cu. yd. of material. This equipment is particularly desirable for excavating work in cities where dirt must be hauled a considerable distance.

The patents as owned by the Penna. Steel Car Co. will also allow the mounting of a special body for hauling heavy machinery, safes and drayage of any kind, as the platform could be set any desired height from the ground.

The executive offices of this concern are held by John F. Carson, who is president of the Carson Realty Co., Phila., Pa.; Mr. Cecil H. Sherman, vice-president, who was, until recently, a member of the firm of Sherman & Mason, dye manufacturers of Phila.; while the manufacturing and sales end is in charge of William A. Kuser, a well-known automobile man, and who has spent a number of years in Detroit, Mich. Mr. Kuser was one of the organizers and, until recently, secretary of the Bigelow-Willey Motor Co., distributor of the Paige cars in Philadelphia.

The executive offices of the concern are 501 Land Title Building, Phila., Pa.



The Pennsylvania Steel Car Company's Special Dump Body Mounted on a Ford Chassis With the Modified Drive

These dump bodies, which are especially suited for hauling building material such as stone, lime, sand, etc., can be attached to any standard chassis of motor truck

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